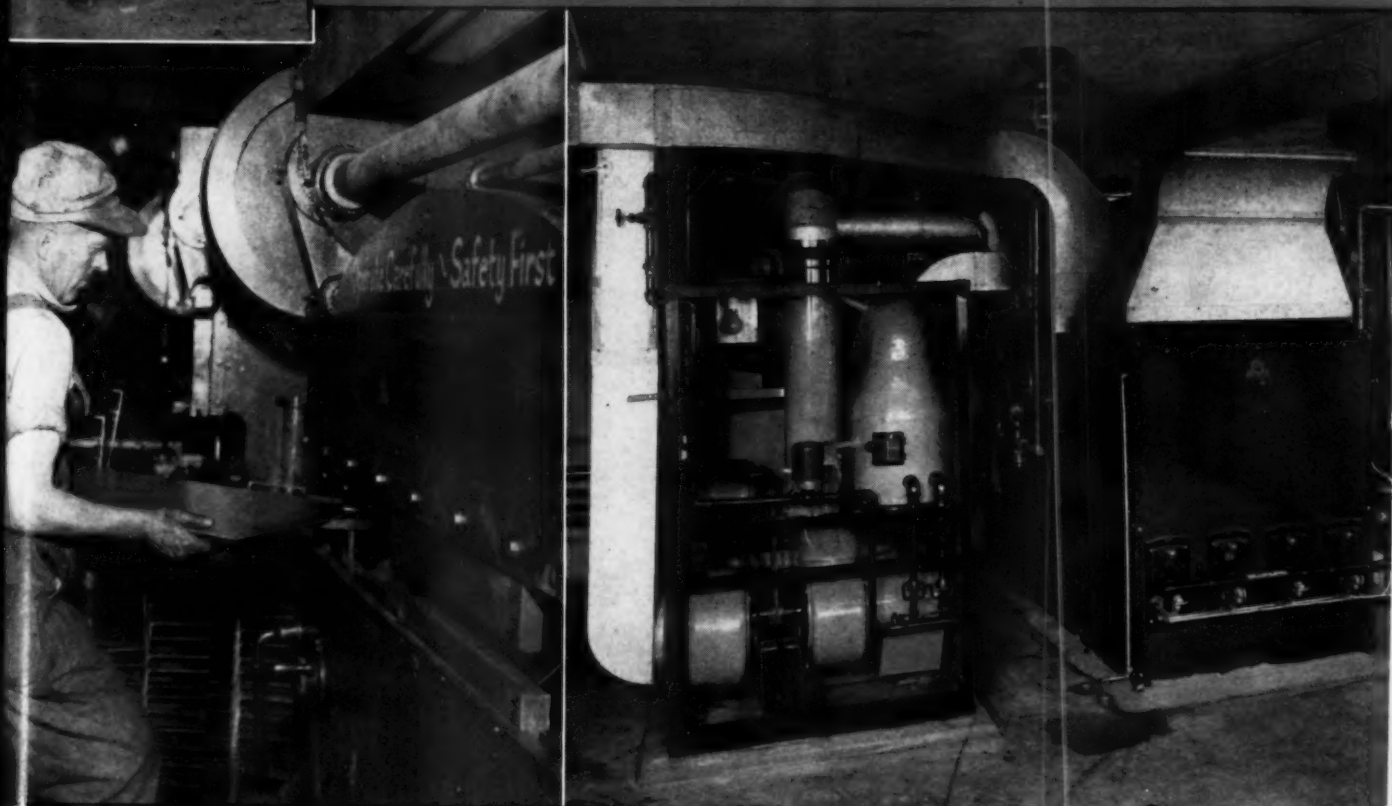




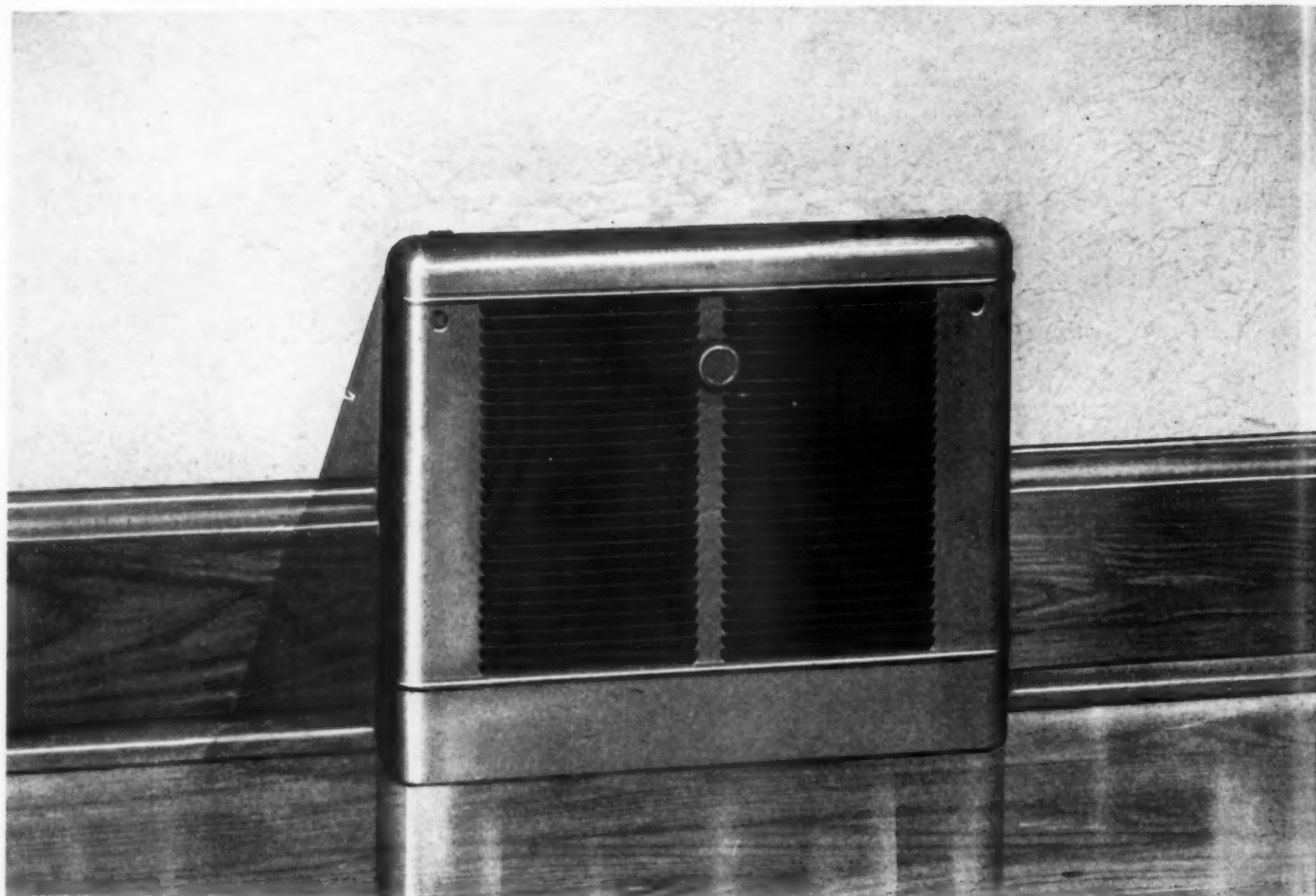
AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING -- SHEET METAL CONTRACTING



SEPTEMBER, 1946

Experience With Profit Sharing	- - - - -	Page 52
Balancing a Forced Air System	- - - - -	Page 68
Air Hammers Speed Seam Closing	- - - - -	Page 80



A smart modern appearance is added to your heating installation when you use AIR CONTROL'S new No. 70 Gravity Baseboard Register. The smooth flowing horizontal lines of this register blend into the wall and baseboard. A lower silhouette and fin type construction adds that modern touch.

This modern register is not just another two-piece register—it is an outstanding register combining smart styling and a revolutionary new construction that prevents streaked walls—the AIR SEAL Inner Frame. This easy to install frame eliminates streaks caused by air in the duct and also around the duct.

Equipped with an attractive knob operator that offers a pleasing appearance and operates the valve with a twist of the wrist. The adjustable fins are set at the correct angle for gravity flow—yet are easily adjustable for forced air applications.

*See your Air Control Jobber for complete information
or write for our new Catalog No. 46.*

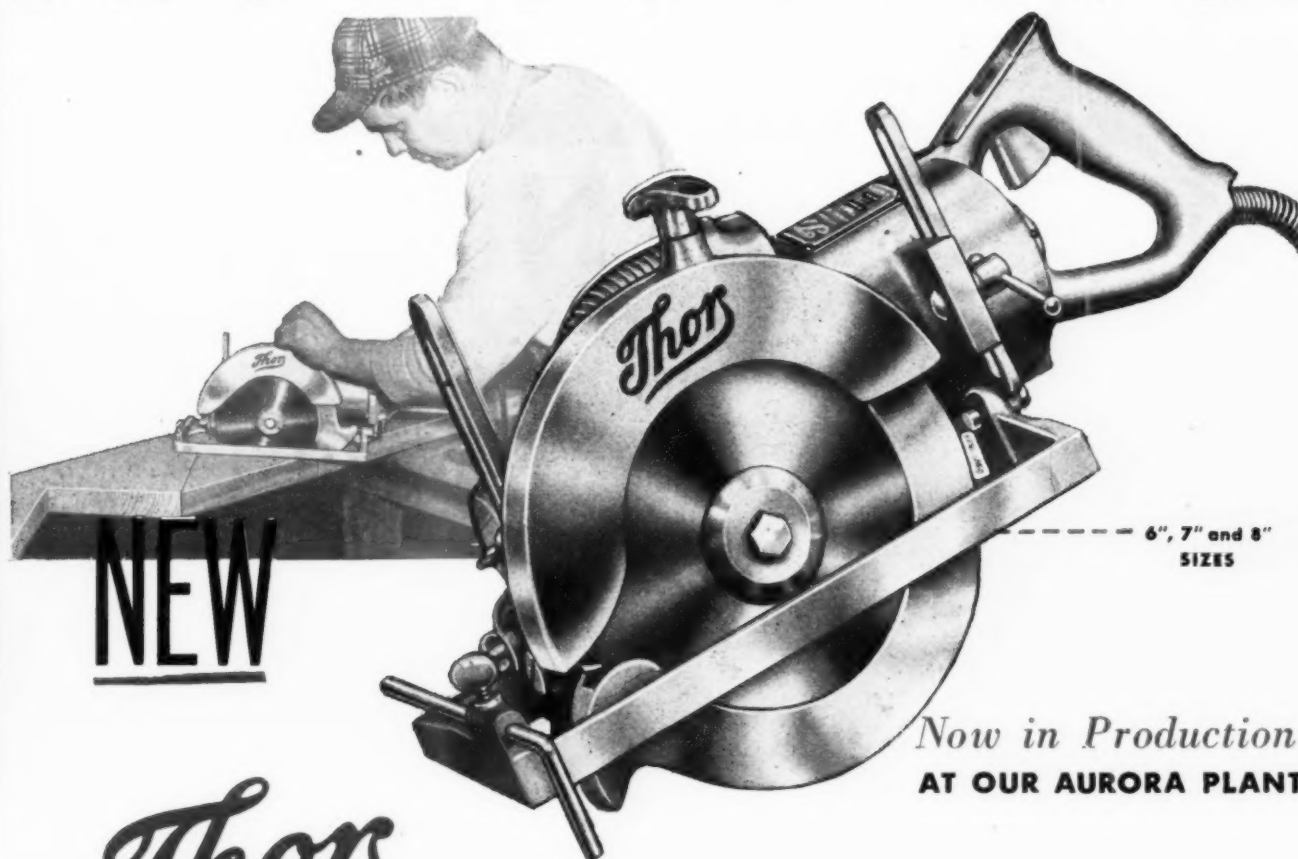
AIR CONTROL Offers a complete line of Gravity and Air Conditioning Registers—Floor Registers and Faces—Attic and Roof Ventilators—Accessories—AIRTROL Air Conditioning Units.

AIR CONTROL PRODUCTS, Inc.

Main office -- COOPERSVILLE, MICHIGAN



EASY CUTTING!



NEW

Thor

Now in Production
AT OUR AURORA PLANT

PORTABLE ELECTRIC SAWS **DO BETTER WORK . . . EASIER and FASTER**

You get plenty of speed and power—*plus smooth operation*—in Thor's new Portable Universal Electric Saws. For industrial maintenance work or hundreds of other types of carpentry—they are real time and labor savers. All-ball-bearing design assures long, satisfactory service. Automatic telescopic guard gives full protection to operator. Natural, firm hand hold provides complete control.

Demonstrate this handy, efficient tool to your own satisfaction—ask for one now.

INDEPENDENT PNEUMATIC TOOL CO.

600 W. Jackson Blvd., Chicago 6, Ill.

Birmingham Boston Buffalo Cleveland Detroit Los Angeles Milwaukee New York
Philadelphia Pittsburgh St. Louis Salt Lake City San Francisco Toronto, Canada London, England

Thor . . . **PORTABLE POWER**
TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

AMERICAN

with which are merged
FURNACES
SHEET METALS
Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

ARTISAN

In This Issue

J. D. Wilder, Editor

J. J. McCullough, Associate Editor A. A. Kennedy, Assistant Editor

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SINCE 1937, Arnold Kruckman has been telling AA readers about the goings-on in Washington. His factual, to-the-point Washington Letters have become one of the most interesting regular features of the Artisan.

Now, after the nose-to-the-grindstone war years, Mr. Kruckman has taken himself into the hinterlands to visit his readers in their home environment. What he discovered is the subject for this month's Washington Letter. Nothing startling—nothing revolutionary—but a pretty good picture of the thinking of men across the country. His letter begins on page 50.

With his article in this issue, Professor Konzo concludes his series explaining how the forced air heating code was prepared and how it should be used. These articles explaining the basic data behind the code began in the January, 1945 issue and have appeared in almost every issue since.

In the belief that AA readers who use the forced air code and manual will want to have this basic data on hand to fully understand the code, AA proposes to reproduce these articles in a suitable binder to be sold at a nominal cost. When the binder is ready, announcements will be made—meanwhile if any reader wants to get an order in early we will accept it.

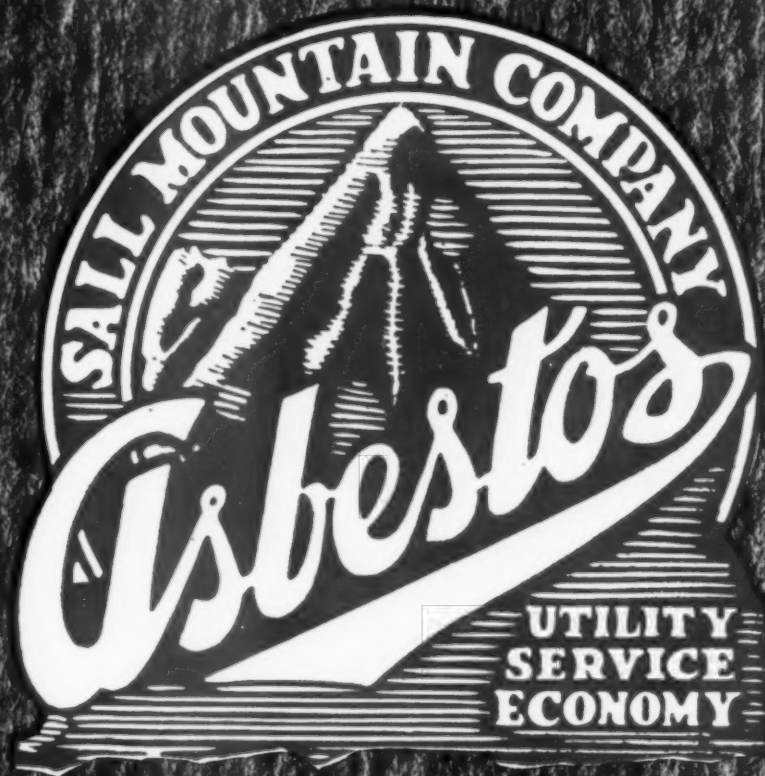
On page 73 is the first of three articles on jigs and fixtures for welding. With welding becoming a standard procedure in practically all shops, these articles should be of value.

Founded 1880

SEPTEMBER, 1946

Volume 115, No. 9

AMERICAN ARTISAN, September, 1946



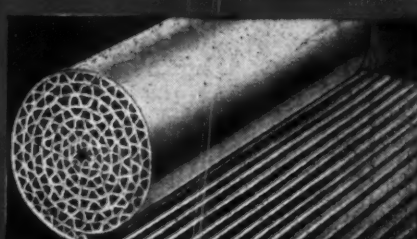
For weather-resistant construction, there is nothing better than Sall Mountain Asbestos. Today's new buildings, combined with modern methods of installation, exclusive to Sall Mountain, insure the longest service life for your construction. This is the only asbestos product that is guaranteed to last for 25 years. Sall Mountain Asbestos is produced by the Sall Mountain Asbestos Company, Inc., and is available in all parts of the United States. For more information, write to Sall Mountain Asbestos Company, Inc., Chicago, Ill.



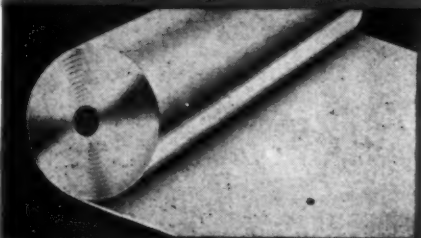
SALL-MO ASBESTOS MILLBOARD



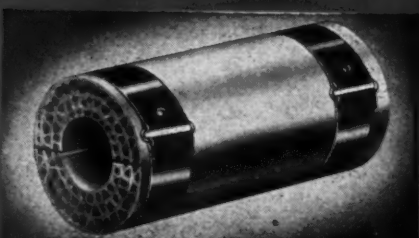
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SALL-MO AIRCELL PAPER



SALL-MO ASBESTOS PAPERS



SALL-MO PIPE COVERINGS



SALL-MO ASBESTOS PIPE JOINT TAPE

SALL MOUNTAIN COMPANY

100 WEST 40TH STREET, CHICAGO, ILL. 5

CHICAGO 3, ILL.

The Editor's NOTE BOOK

UNO's First Vote

A prayer, penned by a tinsmith, asking that the United Nations Organization may bring "lasting peace to us all—all over the world," was discovered in the ballot box in which the security council places the votes that will decide the future course of the world. The tinsmith made the box.

The note, addressed to the United Nations Organization and written on notepaper, said:

"May I, who have had the privilege of fabricating this ballot box, cast the first vote?"

"May God be with every member of the United Nations Organization, and through your noble efforts bring lasting peace to us all—all over the world. Paul Antonia, mechanic."

Like a Hess Article

American Artisan:

I have read the article, "The Future of Oil Heating," by A. E. Hess, managing director, Oil Heat Institute of America, which appeared in the December, 1945, issue of the American Artisan.

I am interested in the burner or the oil furnace picture in Fig. 2, page 87. Will you kindly inform where these can be purchased and where I can secure literature. Am in need of a small oil-fired unit of this type.

The American Artisan is a great magazine and always contains most instructive reading.

Olusted's Tin Shop,
Elyria, Ohio.

Simple Design Method

American Artisan:

Who can give us a practical yet simplified method of measuring up, figuring the size of gas furnace, etc., for various dwellings. It seems every one has a method of his own. We would like a good practical standard system.

Ehrich Furnace & Roofing Co.,
Indianapolis.

Dear Sir:

We suggest that you send fifty cents to Mr. George Boedener, Managing Director, National Warm Air Heating & Air Conditioning Association, 145 Public Square, Cleveland 14, Ohio, and ask him to send you a copy of the New Code and Manual for the Design and Installation of Warm Air, Winter Air Conditioning Systems. This is the new manual to cover proper design and installation of forced warm air heating systems. It makes no difference

Sampsel

AUTOMATIC CONTROLS

THERMOSTATS

DAY-NIGHT CLOCK
THERMOSTATS

LIMIT CONTROLS

DAMPER CONTROLS

UNIT-HEATER and ATTIC
FAN CONTROLS

STOKER FIRE PILOT
CONTROLS

RELAYS • TRANSFORMERS

The Sampsel Line is designed to meet the more exacting standards users demand today! There's a precision-engineered Sampsel Control for every heating need.

SAMPEL TIME CONTROL, INC.
SPRING VALLEY, ILLINOIS

Part of the Sampsel Line!
Send for COMPLETE Catalog!



The Editor's NOTE BOOK

whether the fuel used is coal gas or oil.

This new code, it is hoped, will be adopted by all contractors in the industry and is as accurate an engineering guide as the former Technical Code and is much more accurate than 90 per cent of the various manufacturers' methods or short cut methods.

American Artisan

Cheaper Government?

Much-needed Congressional reform, including more rigid fiscal budget controls, is nearing reality. Both Houses of Congress have shattered tradition by voting to streamline their own procedure of operations. The bill has been sent to the White House after technical differences in the House and Senate versions were worked out.

Wants Humidifier

Gentlemen:

We have had a number of requests for humidifiers of all types but the only type with which we are familiar is the Skuttle type.

We are interested in obtaining information on manufacturers of other types, particularly a spray type and a room or cabinet type.

L. E. Gunsett,
West Allis, Wis.

Mr. L. E. Gunsett:

We show in our annual directory issue three classifications for humidifiers:

1. Humidifiers, Evaporative
2. Humidifiers, Spray Type
3. Humidifiers, Room Type

You should be able to find among these three types a manufacturer among these manufacturers equipment suitable for your particular application. By addressing the manufacturer, you can determine which manufacturer is in a position to give immediate delivery.

Nice Work, If . . .

Everyone in the army of government civilian employees is and "at least 154 days off a year—no pay," according to compilations made by Rep. Earl Wilson. Some even get as many as 189 paid days-off a year, the Congressional reports, adding:

"It's time for Congress to cut down drastically its appropriation to government departments."

If money could talk

FURNACE VALUE *it would say...*

M O D E R N

SYNCHROMATIC

*the leader in the FIELD of
Beauty, Safety and Economy*



COAL



GAS

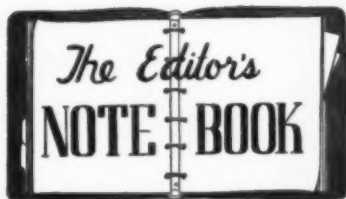


OIL

Write Your Jobber or Write Us Direct

Synchromatic Corporation

WATERTOWN, WISCONSIN



Effect of Register Location

Gentlemen:

We would like information on the effect of register location in different rooms for forced warm air heating in residences.

We would like data from research work, such as was carried on at the research residence at Urbana.

Perhaps you can suggest books or publications that go into this subject.

M. B. Bourne & Son,
Portland, Me.

Dear Sir:

There has been no special bulletin issued by the University of Illinois, covering the effect of register location. In Professor Konzo's book "Winter Air Conditioning" four pages relate to tests in the Research Residence on register location.

Several years ago we published a book entitled "Forced Air Heating" which contains two or three chapters on the effect of register location. In this book the engineering calculations are based upon the ventilating engineer's approach to heating, rather than the simplified codes now in use, nonetheless, this book does contain a lot of data which has never appeared elsewhere.

You might write to register manufacturers and ask them to furnish you with their catalogs which contain charts on "air throw" from registers.

American Artisan

Echo of Global War

War Assets Administration has contracted to sell 500,000 trousers, 500,000 shorts, 1,000,000 shirts (all of cotton khaki) and 1,000,000 cotton drawers to Siam to clothe workers harvesting rice crops. The Siamese government explained the Japanese confiscated all clothing during their occupation. The clothing will come from surplus GI stocks.

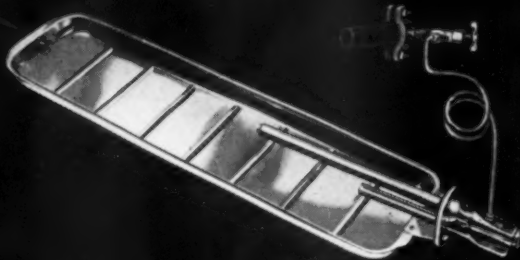
Any Good Humidifier?

American Artisan:

We have noticed from time to time articles in American Artisan about the experiments at the research stations at the University of Illinois and at Purdue.

We wonder if different types of humidifiers have been tested and what type proved the best? We know that this is not as important as some of the other items that make up a heating plant, but we have had complaints in the past about the air being too dry on some

THERMO-DRIP HEAT REGULATED HUMIDIFIERS

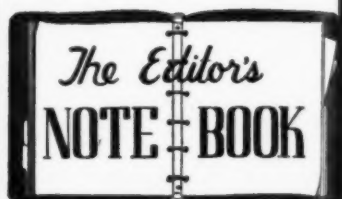


Do the Complete Job of Providing Healthful Comfort

No furnace installation is really complete unless it meets your customers' demands for true healthful comfort. When you install Thermo-Drip Humidifiers on furnace jobs whether old or new, you make them tops in efficiency because Thermo-Drip Humidifiers moisten the air as it is heated in direct proportion to temperature. Thermo-Drip Humidifiers provide healthful comfort for sure! Manufactured of the finest materials, designed and engineered for simple installation, Thermo-Drip Humidifiers make any furnace completely efficient for correctly balanced humidification. Write us today for details.

Automatic HUMIDIFIER CO.
CEDAR FALLS IOWA

FOR EVERY TYPE OR MAKE OF WARM AIR FURNACE



jobs, so naturally we are interested in finding out anything that will be helpful.

We would also like to know how a psychrometer is used to check the humidity in a room.

DeBons & Company,
Arkansas.

Dear Sir:

So far as we know, there have been no tests made by recognized testing agencies on humidifiers.

Most of the humidifier manufacturers have run their own tests and a great many of them have published data on these tests. If you look in our 1943 January Directory Issue, you will find a list of manufacturers of humidifiers and you can write some of these asking for copies of test data.

We are inclosing literature showing acceptable types of hand operated psychrometers. This literature will explain how these instruments are used to check humidity existing in a room.

American Artisan

Cost of Strikes

"Were strikes worth while from the union standpoint?" the Harvard University economist, Prof. Sumner H. Slichter, asks. He goes on:

"Not until early in 1948 will General Motors workers be as well off as they would have been had they not struck and had they worked steadily without any wage increase whatsoever.

"Not until 1953 will General Motors employees be as well off as they would have been had they accepted the company's offer of 13 1/2 cents.

"Two and a half years will be required before the employees of General Electric are as well off as they would have been had they accepted the company's compromise offer of 10 cents and 10 per cent.

"The employees of U. S. Steel will require more than two years before they will have made up for their refusal of the company's compromise offer of 15 cents."

House in 2 Days

A complete house can be erected in two days by a huge concrete mixing machine which drives right up to your building site, pours concrete into giant forms, and then trundles away, leaving workmen to finish the job.

The manufacturer is building a factory at Longview, Tex., to mass-produce the machine, and has already built 24 homes there.

September, 1946

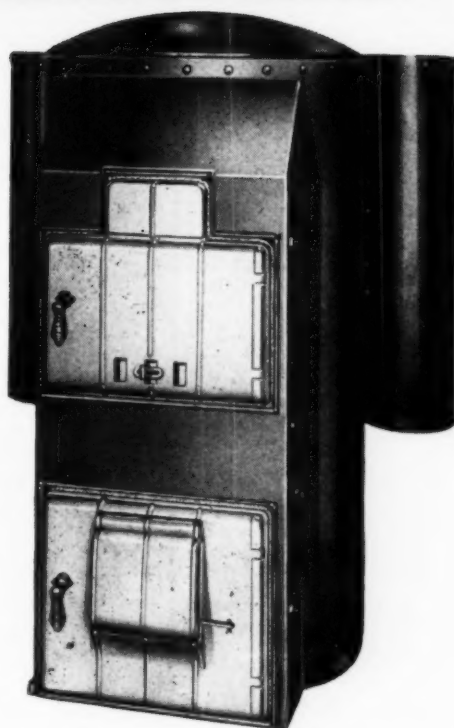
A MAJOR IMPROVEMENT in Furnace Design and Construction

THE NEW WEIR "U" SERIES STEEL FURNACE with

Integral Heating Element *

*Patent applied for

- 1 Drum, pouch, feed and ash throats, and door seats are *all one piece*, riveted and welded for permanent tightness.
- 2 Doors and door seats surface ground for perfect fit.
- 3 Famous WEIR features that have enabled many WEIR Steel Furnaces to establish records of over 50 years continuous service.
- 4 Fire entirely enclosed in refractory lined steel combustion chamber.
- 5 Modern, streamlined front for eye-appeal that makes sales easy.
- 6 IN FULL PRODUCTION NOW—available for prompt shipment.



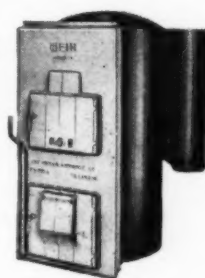
Here's the revolutionary Integral Heating Element of the WEIR "U" Series furnace. No cumbersome front casting. Drum pouch, feed and ash throats, and door seats are *one piece*, riveted and welded for permanent tightness. Gives the cleanest, most healthful warmth possible.

The WEIR "U" Series incorporates all the famous WEIR features. This new WEIR is easier to install. Its modern, streamlined appearance makes sales easy—its unflinching performance makes owner's enthusiastic. And—the new WEIR is AVAILABLE NOW. Send for detailed information TODAY!

EASY TO INSTALL



The large illustration above shows the combustion drum as you receive it. Doors are attached. Doors and door seats are surface ground for perfect fit. Pressed steel front slips into position and is fastened firmly. Casing hooks into front in air-tight seal — keeps basement dirt out. No bolts or screws.



The Integral Heating Element design and construction, besides making the new WEIR *positively, permanently* leakproof, completely encloses the fire in heavy refractory-lined steel. Pressed steel front is not exposed to the fire. Thoroughly tested and proved, the WEIR "U" Series sets new standards of cleanliness, efficiency and ease of installation.



The WEIR "UC" SERIES AIR CONDITIONER: All the advantages of the WEIR "U" Series furnace with INTEGRAL HEATING ELEMENT* plus rectangular casing of modern design for Air Conditioning.



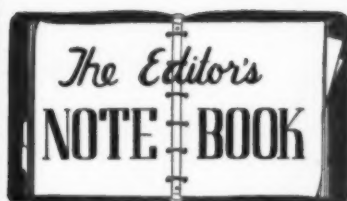
Since
1866

WEIR-MEYER MEANS *Modern Heat*

THE MEYER FURNACE COMPANY

Manufacturers of WEIR - MEYER Furnaces
Air Conditioners for Oil - Gas - Coal

General Offices: Peoria 2, Illinois • Factories: Peoria and Peru, Illinois



Big Inch Uses

Here are some zany suggestions regarding what the War Assets Administration might do with the "Big Inch" and "Little Inch" pipe lines. According to the Wall Street Journal, here are a few of the "pipe dreams" received by the WAA, some meant seriously and some just for fun:

"Run grapefruit juice through the lines from Texas to New York."

"Transport mineral waters with curative powers."

"Use the lines as giant pneumatic tubes, whisking mail across country."

"Suck in New Jersey sea water and channel it through Big Inch to a series of salt water pools. The Little Inch could carry the air to provide proper atmosphere."

"Run Texas jackrabbits through on the hoof for eastern consumption, on the theory that anything becomes a delicacy if it is transported far enough. It is believed that if a specified number of rabbits were introduced into the southwestern end of the lines, a larger number would emerge at the eastern terminal."

Officials of the WAA have come up with a plan to end all plans. They suggest pumping carbonated water into the lines in Texas, add bourbon whiskey in Kentucky, route the concoction through the "ice mines" of Pennsylvania, and deliver the finished product to Eastern consumers.

Wants More Neubecker

Dear Sirs:

I have been a reader of American Artisan for several years. Do you know where I can get data on hood construction for exhausting steam and general ventilation? I can use catalog data on hoods.

Please keep Mr. Neubecker on this twisted pipe work. He is doing fine—just what we need, also on intersections and developments.

E. W. Robinson,
Bridgeton, N. J.

Veteran "Super-Seniority"

The problem of veterans' "super-seniority" has been getting considerable publicity lately. In the beginning it was held (at least Gen. Hershey so declared loudly) that a vet enjoyed a degree of seniority sufficient to throw out any employee, no matter how long he may have been at work, if the vet demanded a job. Since Gen. Hershey first declared this policy several courts have ruled on specific cases. Here are a couple of the decisions:

Federal Judge Arthur F. Lederle on Jan. 30 in Detroit dismissed the "super-seniority" suit of a World War II veteran, ruling that

Greater Profits NOW!

with the new

ROYAL

DUAL-FLOOR FURNACE

(Model D-45,000)



EASY TO INSTALL

Economical too—reports from our dealers say two men in a single day have installed eight ROYAL furnaces in new construction and two in homes already built.

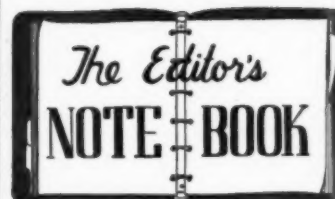
SLIPS INTO PLACE

After cutting specified size holes, the ROYAL furnace slips into place from above the floor—shallow, flat-bed construction eliminates basement or pit (fire-box only 18" deep).

For greater profits now, write for information and prices—TODAY.

ROYAL HEATERS, INC.

1024 Westminster Ave. • Alhambra, Calif.
(Dept. A-9)



a returning service man may not displace a worker under union contract who has greater seniority.

George A. Droste of Westphalia, Mich., brought suit against Nash Kelvinator Corporation. He claimed he was entitled to employment in his classification as a grinder as long as the company employed any men in that classification who were not veterans of World War II.

The court held that upholding the petition would give veterans of World War II "super-seniority" over veterans of other wars and would not be equitable.

The Federal District Court at Springfield, Ill., held—in direct conflict with the decision of the Federal District Court at Brooklyn, N. Y.—that the GI Bill of Rights does not entitle returning veterans to a job with their former employer if rehiring them requires the dismissal of employees with greater seniority rights.

No evidence exists, Judge Charles G. Briggie ruled, that Congress intended old, faithful employees to be discharged so as to make room for veterans. The veteran's status quo with accumulated seniority was definitely preserved . . . he was to get his own job back if it was in existence—not to get the job of another with longer years of service.

Smokeless Furnace

American Artisan:

I hope the ARTISAN will carry details relating to the Fellows smokeless furnace soon.

E. Rohde,
Ohio.

Dear Mr. Rohde:

The Fellows smokeless furnace and heater is not new. This was developed by Professor Fellows some four or five years ago and a number of models of furnaces have been manufactured and put in use by Majestic Company, 733 Erie St., Huntington, Indiana; also by Lennox Furnace Company, Marshalltown, Iowa; and I believe by one of two other furnace manufacturers.

We do not know what is currently being done toward manufacturing the heater.

Manufacture of the furnace is by franchise and the franchises are operated from a Foundation at the University of Illinois. If you want to get full information, we are sure Prof. S. Konzo, College of Engineering, Department of Mechanical Engineering, Urbana, Illinois, will be glad to give you details or tell you whom to contact.

American Artisan.

Positive safety with White-Rodgers Gas Safety Pilots



ANSWERING your demand for a completely dependable pilot, the White-Rodgers Gas Safety Pilot now is available in volume quantities. Tested and approved by years of engineering and field tests, as well as on many thousands of actual installations, the White-Rodgers Gas Safety Pilot provides both simple design and reliable performance.

New Method of Operation—This pilot operates on the difference in expansion of two stainless steel

members and contains no bi-metal or thermocouple. The pilot is fast acting and low in gas consumption.

Automatic Recycling—Relighting is the only action necessary to put the safety pilot back in operation. When relighted it recycles automatically making additional adjustments unnecessary.

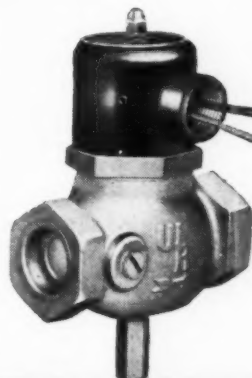
Now Available—Write today for full information!

White-Rodgers Diaphragm and Solenoid Gas Valves



These fast acting Diaphragm Gas Valves are rapidly replacing other valve designs on all types of installations. Preferred by most utilities, advantages include silent operation, unusually high capacities, simplicity of construction and positive operation regardless of type of gas used.

Designed for all types of automatic heating systems, both original and conversion. Also designed with built-in mechanical limit control. Available in sizes from $\frac{3}{4}$ inch to $2\frac{1}{2}$ inch with capacities from 450 to 2500 c.f.h. Also furnished in packages including room thermostat, thermostat cable and installation staples.



Representing a distinct improvement in engineering design, White-Rodgers Solenoid Gas Valves provide definite advantages. Magnetic hum is eliminated and high plunger force is provided, resulting in positive opening and closing of the valve.

Available in sizes from $\frac{1}{4}$ inch to 1 inch with capacities from 65 to 490 c.f.h. Also furnished in convenient packages, including room thermostat, cable and staples.



WHITE-RODGERS ELECTRIC CO.

ST. LOUIS 6, MISSOURI

Controls for Refrigeration

Heating

Air Conditioning

The Editor's NOTE BOOK

War Babies

Did you wonder where they sprang from—all those scooters and cigarette lighters made of aluminum, which suddenly showed up around Christmas? And those rainbow-hued aluminum clothespins? They came from Hollywood, where a lot of factory "owners in overalls" are trying to stay in business now that the shooting's over.

They're "war babies," determined to grow up into peacetime businesses. There were something like 5,000 small factories which mushroomed around Los Angeles to make the thousand-and-one parts and gadgets which big aircraft companies and shipbuilders assembled into planes and ships.

Now they're making those "Hollywood pinup" clothespins, toys, new-fangled cameras, hipjoints for artificial legs—anything they can think of to utilize aluminum scrap, their native courage and craftsmanship, to make jobs, production and businesses where none were before.

Wants Bookkeeping System

Gentlemen:

This is a new firm composed of veterans of this war who have just recently been released from active duty. There are certain problems with which we are not too familiar and any answer to these problems from you would help us considerably to meet the current trends of the heating and air conditioning field.

Our biggest difficulty at the present time is the development of a proper costing and accounting system. In your September issue, 1945, page 84, there is briefly outlined a double-entry bookkeeping system which, through brief, but practical experience, has proven to be the more desirable system. If you have any information relative to the above, we would greatly appreciate your sending it to us.

Riopelle Bros.,
Dixon, Ill.

Dear Sir:

The need for an up-to-date bookkeeping and cost accounting system is widespread; unfortunately, in our opinion, there is not available at the present time any system suited to the warm air heating and sheet metal contracting industry.

A committee has been appointed by the Sheet Metal Contractors' National Association to prepare a bookkeeping and estimating system. Up-to-date, this committee has been gathering together various forms, cards and ideas on bookkeeping,

TUBERATOR

You'll notice we've taken off the outside casing of a TUBERATOR to show you INSIDE features that make TUBERATOR the most efficient, safe, and economical warm-air furnace on the market today.



One of the most revolutionary of the 31 outstanding features of the TUBERATOR is the gas-tight, easy turning

Revolving Ash Pit

which permits easy gas, oil, or stoker installation at any angle!

AND THAT'S NOT ALL . . . many more new features mark TUBERATOR'S exclusive design which was developed to produce an abundance of clean heat at amazingly less fuel cost. For example . . .

1. TUBERATOR has 100% Primary Heating Surface!
2. TUBERATOR has built-in Radiant Heated Air Conductor Tubes for faster circulation to distant rooms!
3. TUBERATOR has the Functional Fuel Conservor and Automatic Flue-Draft Carburetor, pioneered, designed, and successfully tested only by TUBERATOR!

Write today for illustrative folder giving complete specifications and information about all 31 exclusive TUBERATOR features. Address requests to Dept. A-946.

WHEELING FURNACE CORP.

MARTINS FERRY, OHIO



The Editor's NOTE BOOK

together with prices prevailing in certain communities and methods of estimating work. Sometime in the near future the committee will sit down with this accumulation of material and will roughly determine the best system for bookkeeping and a suitable system for estimating.

These systems will not be ready for distribution much before the end of 1946.

American Artisan

Extra! Extra!

Striking out boldly against the myriad ceilings still over needed consumer goods, OPA has "de-controlled" horse-blankets, midge racing cars, eyebrow dyes, cuticle removers, fly-swatters, buttonhooks, collar buttons, pincushions, coat hangers, mop sticks and false teeth.

The OPA has also "de-controlled" ceiling prices on diving suits, oboes, snowshoes, bowling balls, pool cues, croquet mallets, Christmas seals, wooden shoes, Ferris wheels, merry-go-rounds, corset laces, magicians' tricks—and zinc residues!

Pull-Thru Collector

American Artisan:

We would like some information on a pull-through dust collector.

We are anxious to know how these collectors are baffled. We can figure how to size this collector, but we are at a loss to know how to baffle a system of this kind. What we wish to do is run our main trunk through a collector, from the collector to the blower, and from the blower through the roof.

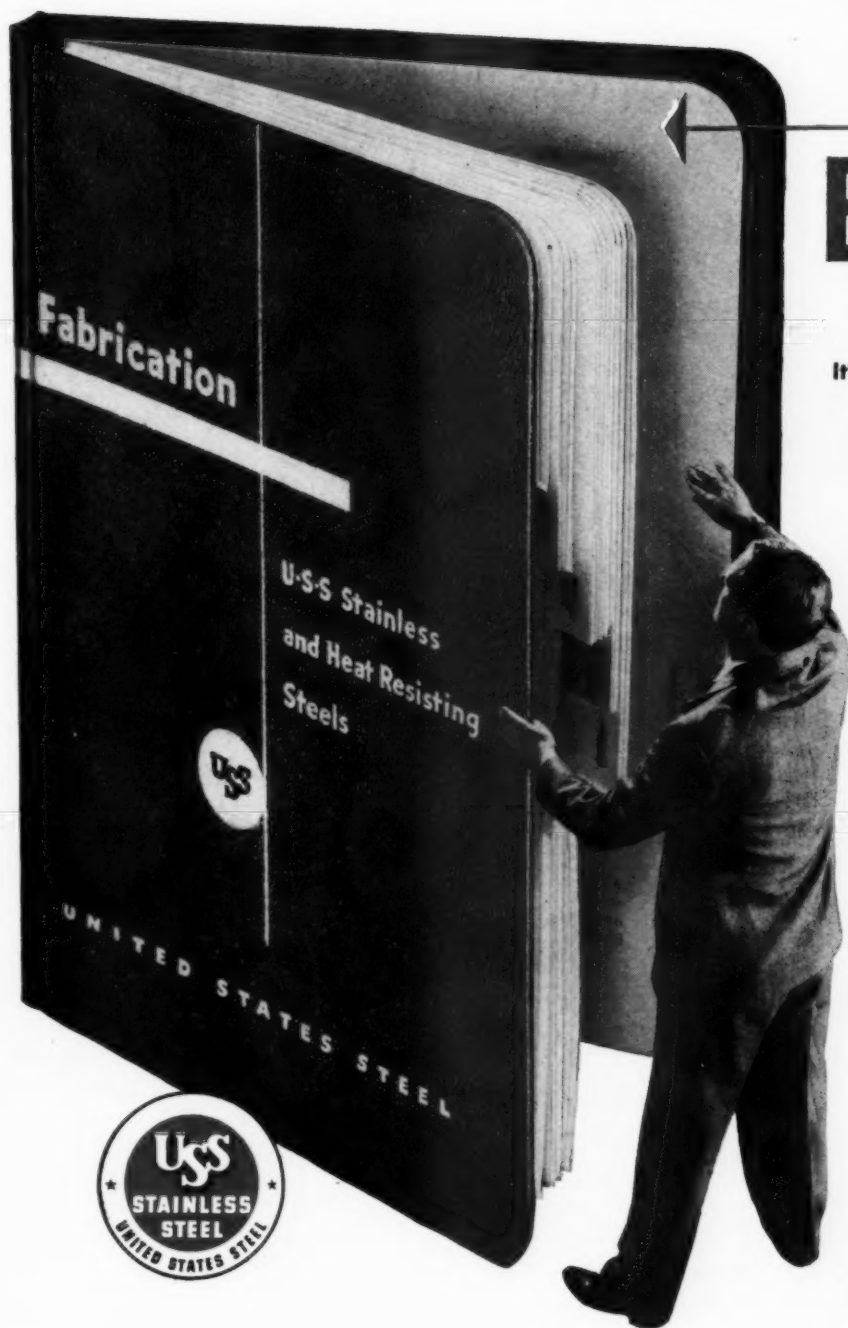
Ben B. Elbling,
Chicago, Ill.

Dear Sir:

We have examined various books and most of them state that the inside of the collector (in other words, baffling) is in no way different from the baffling used for ordinary slow-speed collectors where the fan blows into the collector. We attach a pencil sketch of an arrangement. In the book, "Correct Practice in Industrial Sheet Metal Work" published by AMERICAN ARTISAN, you will find on pages 14 to 21, inclusive, dimensions, designs and interior arrangements for various types of collectors. We believe that these data are sufficiently clear to permit you to design your own collector.

American Artisan.

Every Sheet Metal Worker should have this NEW BOOK



It's yours for the asking... a handsome 130 page leatherette-bound textbook that gives you the latest and most complete information on fabrication with U·S·S Stainless and Heat Resisting Steels.

It tells you what you ought to know about drawing, forming, spinning, welding, soldering, polishing and finishing. Shows how to get best results in cutting, punching, shearing and perforating. Gives correct procedure for drilling, tapping and reaming. Lists recommended machining speeds and feeds. It helps you determine what grades and finishes of U·S·S Stainless will best suit different kinds of service and will fabricate best on your equipment.

This book is packed with practical, up-to-the-minute information that will save you time and money. If you're working with Stainless Steel, you can't afford to be without it. Send for your copy today — it's FREE. Just attach the coupon below to your company letterhead and a book will be sent you promptly. Use it as a guide to practical Stainless Steel fabrication. If you need any other assistance, our stainless steel specialists will gladly give you the benefit of their long experience.

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago and New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago
COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh
TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

United States Steel Supply Company, Chicago, Warehouse Distributors
United States Steel Export Company, New York

United States Steel Corporation Subsidiaries
Room 622 Carnegie Building, Pittsburgh 30, Pa.

Please send me your FREE book, "Fabrication
— U·S·S Stainless and Heat Resisting Steels.

Name.....

Address.....

City..... State.....

UNITED STATES STEEL

QUIET...



IT WOULDN'T WAKE A BABY

Easy, even hydraulic pressure does the work. No jarring impact as the die bottoms. No shock to the worker to lessen efficiency.

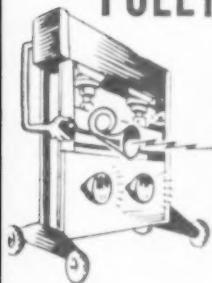
VIBRATIONLESS



GLASS OF WATER ON THE PLATEN, YOU'LL NEVER SPILL A DROP

That's how evenly pressures are distributed over the unit. That too, is another reason why dies last longer in a KRW.

FULLY EQUIPPED



EVEN TO HEAD- LIGHTS AND HORN IF YOU WANT 'EM

Connect to your 220 line, install your dies, and you're ready to go for bigger profits. Each unit is equipped with adequate power plant to meet your needs.

DEFLECTION NIL



NO SWAYBACK PLATENS TO WORRY ABOUT

Where pressures require it, bed rails, platens and head are trussed and ribbed to eliminate any deflection. Press illustrated stamps three jams per stroke.

MOBILE...



PUT IT ON CASTERS IF YOU WANT TO

It weighs only 5,500 lbs., and because it is hydraulically operated, with pressures evenly distributed, no foundation bed is necessary. The secret to this is KRW's welded design.

"More Profitable than



Specifications

KRW 100-TON PRESS BRAKE

Upper Platen 2½" x 14" x 44"

Lower Platen 2" x 12" x 44"

40 Strokes per minute

Floor Space Req. Incl. Power

Plant 42" x 80"

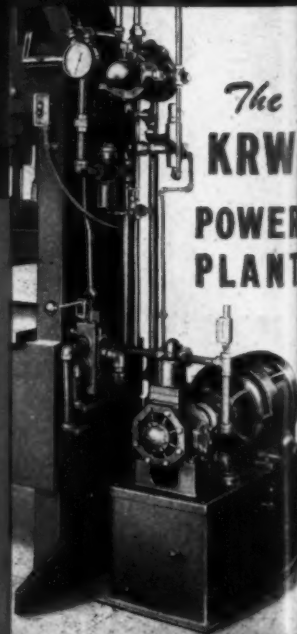
Overall Height 94"

Weight Incl. Power Plant .. 5,500 lbs.

Ram Pressure 100 tons

Automatically Controlled Stop

Can be made as gap type, or with open or closed ends. Distance between uprights and length of platens can be increased or decreased, depending on your needs.



man Politics or Stamping Silver Dollars!"

... K. R. Wilson

THIS 100-TON KRW HYDRAULIC PRESS BRAKE PRODUCES JAMB SECTIONS FOR 2000 WINDOWS A DAY AT A FRACTION OF THE COST OF HEAVIER EQUIPMENT ... HOLDS WORKER FATIGUE TO A MINIMUM!

This press had been in operation only a few days before the Wendling Iron Works of Buffalo ordered three more—that's how satisfactory it proved in use. Now it is turning out 4,000 jamb sections for 2,000 windows, illustrated below, in two 8-hour shifts a day. No longer is it necessary to buy tons of unnecessary weight in a press in order to get efficient production. KRW welded construction plus scientific distribution of stress and load has radically changed all that. This 100-ton KRW press weighs a fraction, and costs a fraction of comparable equipment.

Because this press is hydraulically operated and not mechanically driven, it is quiet and almost vibrationless in

operation. The press cannot be jammed by careless operation—the platen can be stopped and reversed at any point in its travel. Two heavy-duty cylinders develop controlled pressure to perform the work. Pressure is perfectly equalized between these cylinders by the exclusive KRW mechanical linkage and torque bar arrangement. Pump equipment varies depending upon customer requirements. This press can be engineered as a gap type or with open or closed ends. Platens will take standard dies. Adaptable for all light metal press work. Write for details, or better still, tell us what you want to accomplish and we'll quote you specifically. Mail the coupon.

DIES QUICK DELIVERY TO YOUR SPECIFICATIONS

We have arranged dependable connections for the manufacture of all types of dies for KRW Press Brakes. Send us your blueprints and specifications for accurate costs and delivery date.

NAME YOUR NEEDS
WE'LL QUOTE PRICE
AND QUICK-DELIVERY
DATE..FILL OUT AND
MAIL COUPON

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

Please give me the facts regarding the KRW 100-ton Press Brake.

Name

Address

City Zone State

Capacity and size needed

K. R. WILSON

15 MAIN ST. BUFFALO 3, N. Y.

Formed from
14 Ga. hot
rolled steel.

CONSOLIDATED'S

Big 4

*... gives you sales and profit leaders
Now ... and for every season of the year!*

Every dealer franchise with Consolidated Industries, Inc. is becoming increasingly important because of what is happening on our production lines. We're in full production on a complete, year 'round line of sales leaders—stokers, gas burners, oil burners and home freezers. You can follow the calendar with Consolidated because every season has something to sell if you are backed by Consolidated's complete merchandise line.

As we swing into the fall heating season, Consolidated Stokers—with a 10 year transmission guarantee, a full 3-year tuyere guarantee—are your sales spearheads. Domestic, commercial, bin-feeds—each model is "first with all the better features": A new kind of precision-made transmission of unparalleled power and long-life; Consolidated's exclusive Dual-Pressuremeter air control; the Moto-Air unit, another exclusive that gives a vibrationless, quiet operation like nothing you've ever seen. Every part of this "stoker man's stoker" is packed with that kind of salability.

For the early months of the year, Consolidated Home Freezers open new sales possibilities for you

with units as fine as anything you have ever imagined in this new appliance market.

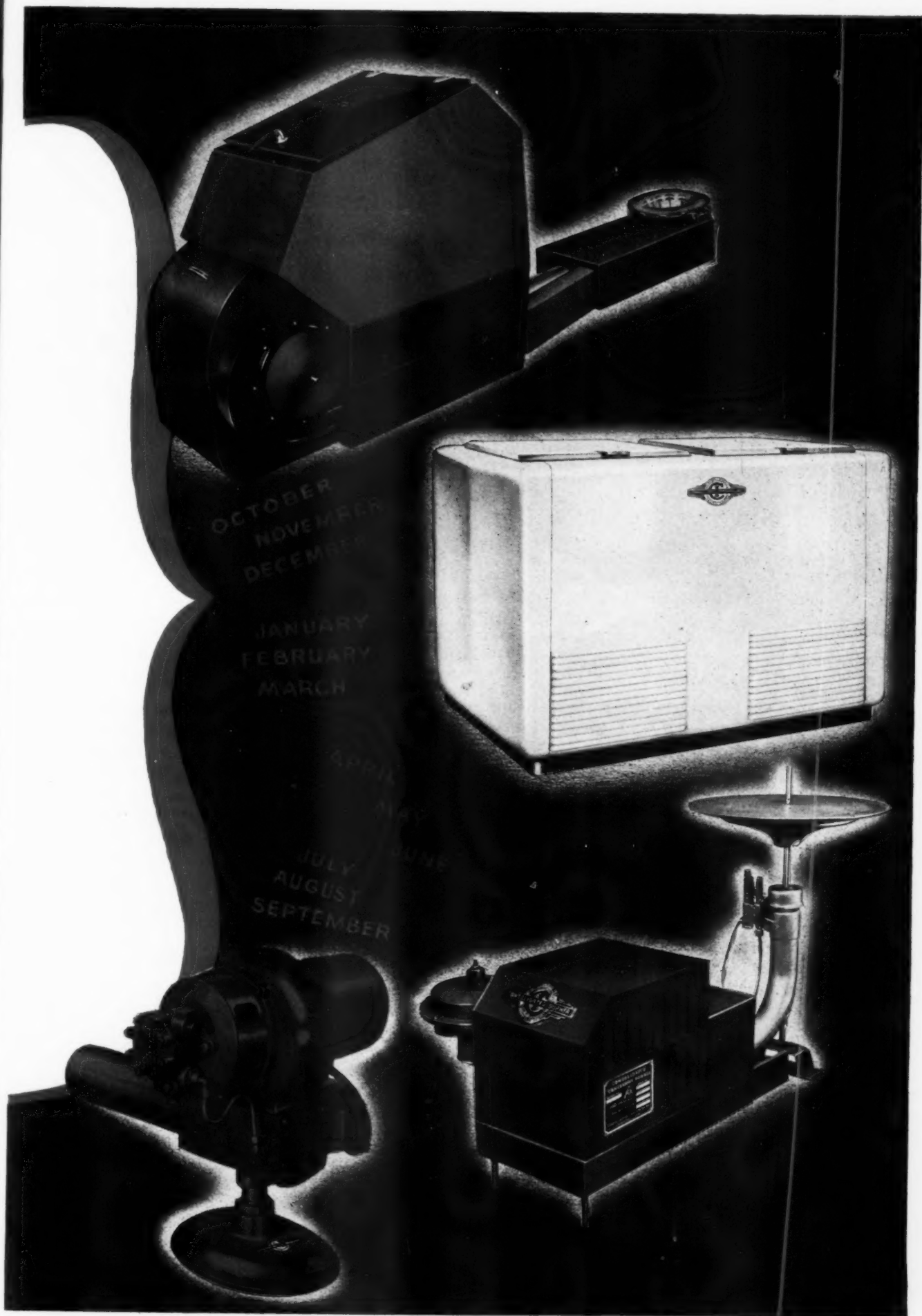
For spring and summer, Consolidated's bid for new building installations are a new line of Gas and Oil burners. (You have doubtless heard of the new Consolidated Gas Conversion Burner, first of a complete line of gas burning units, which is already making its name for the same kind of high burning efficiency, ease of installation, and service-free features that has made Consolidated Stokers outstanding.) Consolidated's Oil Burners will do the same type of job as every Consolidated automatic heating unit under fire today.

We've said we are after first place in the industry. Every month sees us gaining on that goal. The reason is important to you: We have built a sales-training and sales-help program as powerful and advanced as our products. It is proving every day that it will open new sales and profit possibilities for Consolidated dealers. We want you to see it. If you are the kind of dealer who would like to be a part of the most sales-minded organization in the field, write, wire or 'phone us TODAY.

CONSOLIDATED INDUSTRIES, INC. LAFAYETTE, INDIANA



AUTOMATIC COAL STOKERS • GAS BURNERS • OIL BURNERS • HOME FREEZERS



CONSOLIDATED'S

Big 4

*... gives you sales and profit leaders
Now ... and for every season of the year!*

Every dealer franchise with Consolidated Industries, Inc. is becoming increasingly important because of what is happening on our production lines. We're in full production on a complete, year 'round line of sales leaders—stokers, gas burners, oil burners and home freezers. You can follow the calendar with Consolidated because every season has something to sell if you are backed by Consolidated's complete merchandise line.

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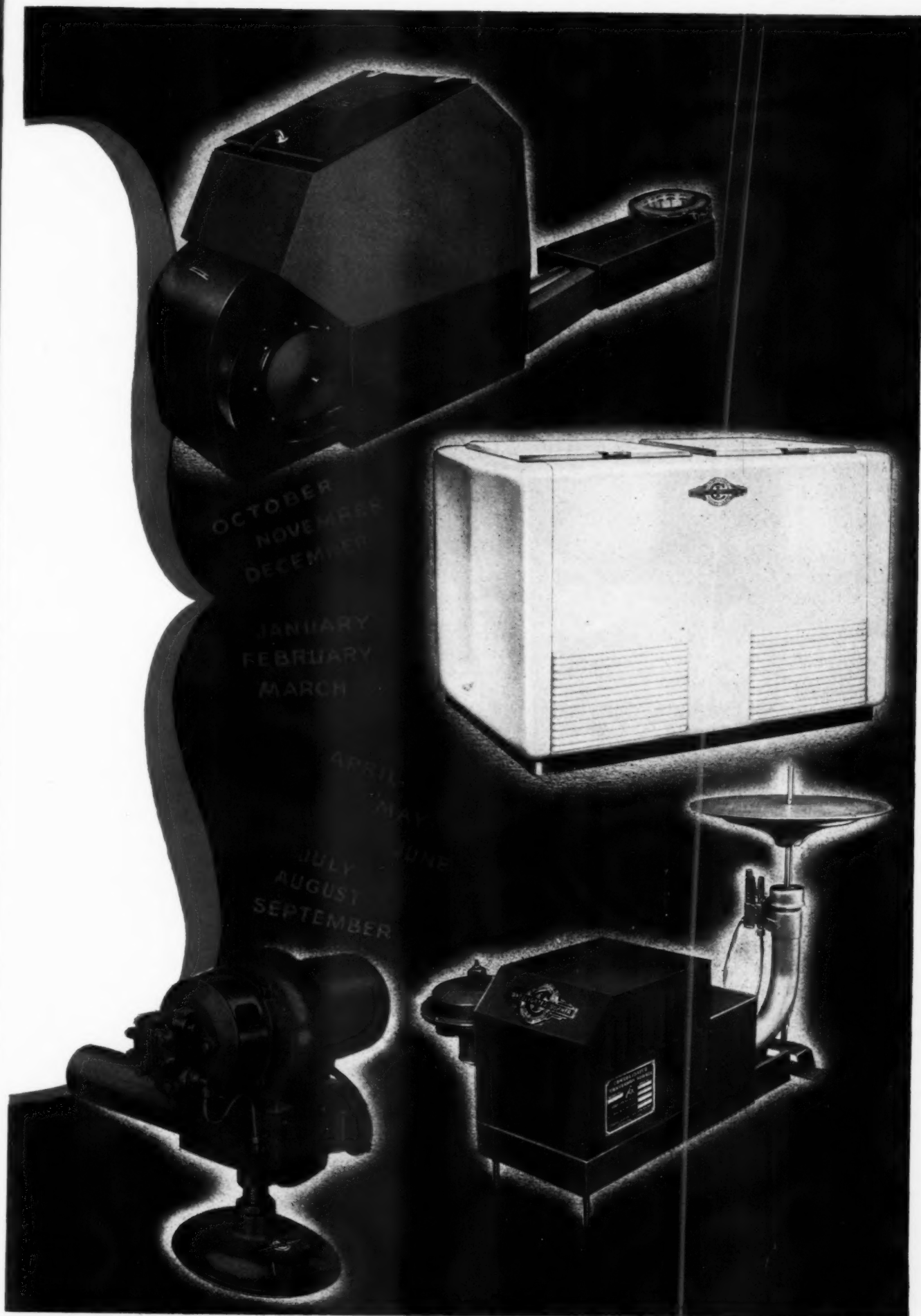
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CONSOLIDATED INDUSTRIES, INC. LAFAYETTE, INDIANA



AUTOMATIC COAL STOKERS • GAS BURNERS • OIL BURNERS • HOME FREEZERS





**We're Backing This Man
To Win the Battle for
The Heating Business—He's the**

**Independent
Furnace
Dealer**



Sure, there's going to be a fight for the heating business. The heating and air conditioning market is a vast, rich field for sales, and powerful interests are going to make strong campaigns in this market.

But we're putting our chips on the Independent Furnace Dealer, because we think he will continue to sell and install the bulk of the home comfort equipment.

We've been working with Independent Furnace Dealers for a long time. We have a lot of respect for their experience, ability, and reliability. The Independent Dealer deserves the furnace business, and he's going to get it because he alone is fully qualified to make safe, efficient, dependable heating and air conditioning installations.

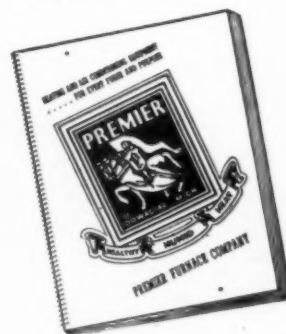
We want PREMIER equipment installed right, by capable Independent Furnace Dealers. We shall continue to limit the sale of PREMIER equipment to the Independent field, and to do everything we can to keep

the furnace sales and installations in the hands of the Independent Dealers.

Every PREMIER Dealer will be protected by our Exclusive Franchise. PREMIER Dealers will receive expert Factory Planning Service, plus the assistance of factory trained field engineers, and a wealth of advertising helps. Most important — PREMIER Dealers will have the most complete line in the field, including everything needed to make good heating, air conditioning, and cooling installations.

Write... for FREE Portfolio

Find out if the PREMIER Exclusive Franchise is available in your locality. Learn for yourself what immense opportunities this Franchise offers. Write us today.



PREMIER Furnace Co., Dowagiac, Mich.

Manufacturers of Warm Air Heating and Air Conditioning Equipment

EASY ON THE DRAW

If your manufacturing processes involve severe stamping, forming or drawing operations, you will find Weirton steels well qualified for the assignment. They provide deep-drawing qualities that speed the fabrication of intricate shapes—reduce scrap loss and production costs. Manufacturers in many fields have learned to depend on Weirton for steels of uniform quality, exceptional ductility.

WEIRTON



STEEL CO.

WEIRTON, W. VA. Sales Offices in Principal Cities



Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.





**"I LIKE MY
VIKING DEAL"**

Yes sir! I know I've got a GOOD line . . . and I'm going to make money with it . . . and it's COMPLETE, everything for heating and cooling. I've been in this business for years and have yet to see a better, more complete line.

My VIKING Franchise gives me an *exclusive* territory. An aggressive VIKING distributor helps me with engineering details, handles my inventory until I need it and gives me a real hand all the way.

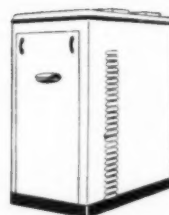
I'm absolutely *sold* on VIKING's merchandise . . . an oil furnace with either the pressure-type burner, or vaporizing-type burner, a gas furnace with the stainless steel ribbon type burner, a water heater with Econ-O-Mizer Pilot, a boiler of horizontal Fire Tube design, or a cooling unit with the radial compressor . . . all these and more too are in the VIKING line.

I'm getting some of this new VIKING equipment now . . . and 1947 should be a great year. Yes sir! . . . if I hadn't already signed my deal with VIKING, I'd be hot after their local distributor to get it lined up . . . but quick! For my money it's the best deal in the industry!

Write to us on your firm's letterhead. We will show you why this Contractor-Dealer is so enthusiastic about his VIKING Franchise. We will also send you the name of the VIKING Distributor in your territory. DO IT TODAY!

THE VIKING MFG. CORPORATION

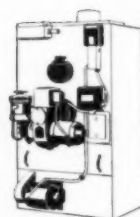
1747 Chester Ave., Cleveland 14, Ohio



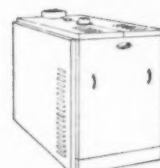
Oil and Gas
Furnaces



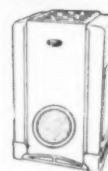
Water
Heaters



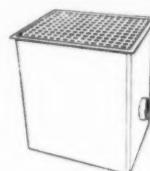
Utility Room
Furnaces



Boilers



Space Heaters



Floor Furnaces



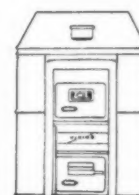
Year--Round Air
Conditioners



Conversion
Burners



Room Coolers



Coal
Furnaces



Domestic Stokers

The VIKING Complete
line of Heating, Cooling and
Year-Round Air Conditioning
Equipment — Fuel-Oil, Gas
or Coal-Fired.

W A R M I N W I N T E R . . . C O O L I N S U M M E R



The Mercoid Way

One outstanding feature about Mercoid Controls is the ease in making the necessary operating adjustments.

You simply use your fingers—no tools whatever are needed. On either the Type M-41 Furnace Limit Control or the Type M-43 Furnace Fan Control, the adjustment mechanism is alike. You press the small knob in center of the cover and turn it left for the desired low setting, then pull the knob and turn it to the right for the desired high setting as indicated in plain view on the calibrated dial. That's all there is to it—done in a matter of seconds.

This is only one of the many other features you'll like about Mercoid Controls.

We will be glad to send you a Mercoid catalog upon request.

THE MERCROID CORPORATION, 4201 BELMONT AVE., CHICAGO 41, ILL.

★ **MERCROID**



CONTROLS

FOR HEATING, AIR CONDITIONING, REFRIGERATION, AND VARIOUS INDUSTRIAL APPLICATIONS

PLASTEEL

The Scientific Roofing that makes
Galvanized Iron Obsolete

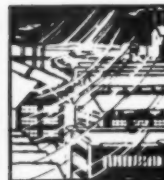


Just as modern industry turns to scientific production methods, it now turns to *scientific protection* for its buildings, machinery and other costly equipment. Experienced industrial engineers, architects and maintenance operators know that Plasteel Roofing and Siding is the perfect combination to provide that type of *permanent protection*. They know Plasteel is made of high-strength *steel*, hermetically sealed within a weather-tight plastic. Then for further insulation, it is finished with pure mineral mica—a combination which *defies deterioration*. That's why Plasteel is corrosion-proof and maintenance-free. That's why Plasteel is preferred above all others for factories, mines, mills, canneries and other industrial needs.

PLASTEEL Defies—



HEAT



COLD



MOISTURE



ACID FUMES

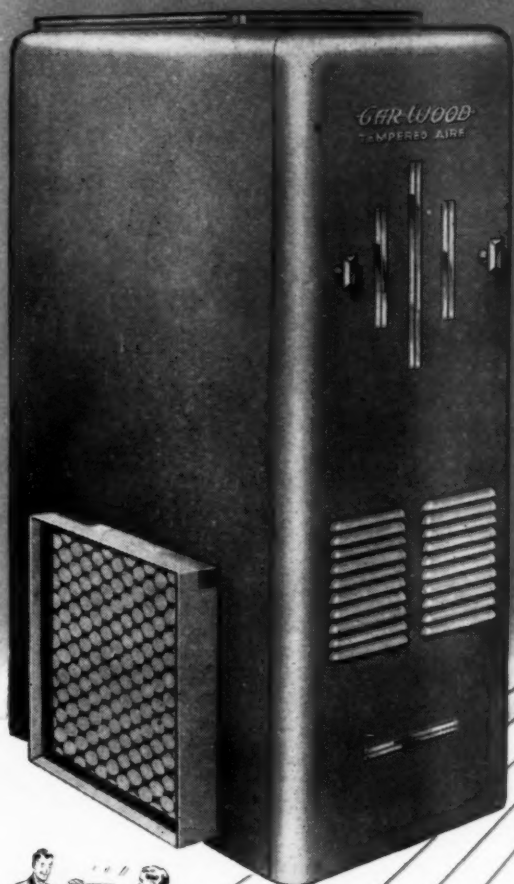
Let us send details—
Write or wire today



PROTECTED STEEL PRODUCTS

General Office and Plant

Washington, Pennsylvania



These
OUTSTANDING FEATURES
make **GAR-WOOD**
TEMPERED-AIRE
*Easier to
Sell!*



- 1 THE NEW completely automatic Tempered-Aire is an integrally built furnace burner unit that is backed by 20 years of research.
- 2 THE ECONOMIZER, located below the firebox, contains many narrow tubes to provide greater heating surface and more intimate contact of hot gases and air. Cold air from the blower is forced between these tubes at high velocity before reaching the hotter firebox.
- 3 THE BURNER and firebox combustion chamber are integrally built. The unit has completely demonstrated the soundness and value of its design features to produce a clean fire with a minimum of excess air.
- 4 THE POWER UNIT maintains a definite controlled pressure that assures the proper mixture of oil and air to produce a uniform flame regardless of draft variation. All parts are die-formed and welded into a single rigid unit. The power unit is rubber mounted for silent operation.
- 5 NEAT, COMPACT, beautifully styled Tempered-Aire is designed to meet the heating requirements of every type and size home.



WHY YOU
SHOULD BE A

GAR-WOOD

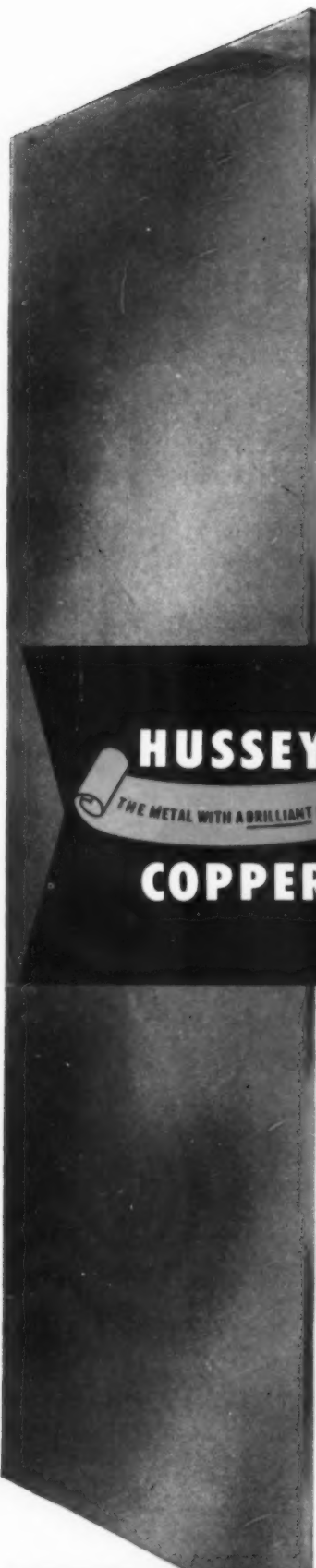
DEALER

Write Today
for This
Free Booklet

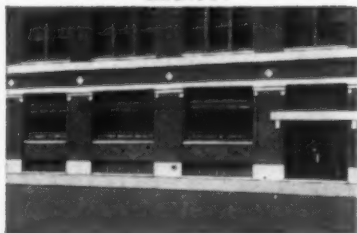
GAR WOOD INDUSTRIES, INC.
HEATING DIVISION • DETROIT 11, MICHIGAN

Canadian Distributors: Engineering Industries, Ltd.
114 Laird Drive North, Leaside, Toronto 12, Ontario

HOISTS AND BODIES • WINCHES AND CRANES • TANKS • ROAD MACHINERY • MOTOR BOATS



CHICAGO:



212 South Jefferson St., Chicago 6, Ill.
NA ymarket 3607

ST. LOUIS:



1620 Delmar Blvd., St. Louis 3, Missouri
Central 9192

CINCINNATI:



424 Commercial Square, Cincinnati 2, Ohio
MA in 2833

PITTSBURGH



2850 Second Ave., Pittsburgh 19, Pa.
GRant 3650

HUSSEY

THE METAL WITH A BRILLIANT FUTURE

COPPER

Quickly Available
Through Modern
Warehouses Located
in Important
Industrial Centers

NEW YORK:



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CA nal 6-6326

PHILADELPHIA:



1632 Fairmont Ave., Philadelphia 30, Pa.
FR emont 5037

CLEVELAND:



5318 St. Clair Ave., Cleveland 14, Ohio
HE nderson 7695

C. G. HUSSEY & COMPANY

(Division of Copper Range Co.)

ROLLING MILLS and GENERAL OFFICES: PITTSBURGH, PA.

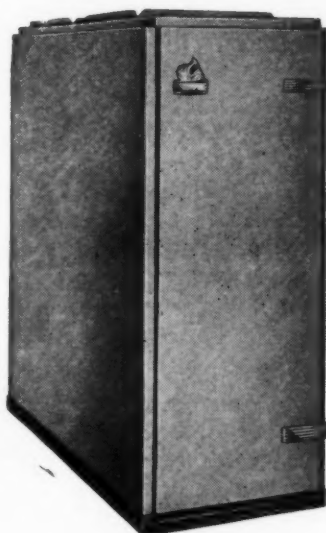
**HUSSEY WAREHOUSES CARRY STOCKS OF COPPER
AND BRASS PRODUCTS FOR PROMPT SHIPMENT.**

THERE'S *Eye* APPEAL *Buy* APPEAL

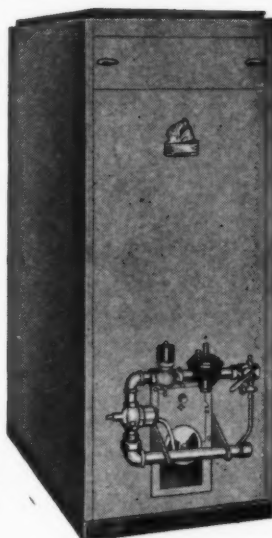
IN *Luxaire's* 1946 GAS FIRED UNITS



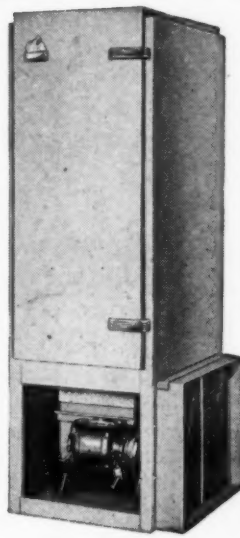
Series 8000
Oil-Fired, Steel
Conditioning Unit



Series A
Gas-fired, Steel
Air Conditioning Unit



Series G
Gas-fired, Steel
Gravity Furnace



Series H
Gas-Fired, Utility
Steel Air Conditioning Unit



Series 700
Coal-Fired, Steel
Gravity Furnace



Series AC-700
Coal-Fired, Steel
Air Conditioning Unit



Series C
Coal-Fired, Cast
Gravity Furnace

Never before has the heating market been offered a line of automatic, gas-fired heating and air conditioning units so predominant in "Eye Appeal—Buy Appeal", as the new 1946 Luxaire line.

Smartly designed, attractively finished cabinets enclose the compact, efficient heating plants that produce the maximum in automatic gas heating efficiency—heating plants that have passed the latest stringent requirements of the American Gas Association.

Luxaire's 1946 line provides you with the opportunity for greater sales . . . greater profits . . . and greater prestige in modern heating equipment.

THE C. A. OLSEN MFG. CO. - ELYRIA, OHIO

Luxaire HEATING & AIR CONDITIONING UNITS



"A miracle—a clean basement! Gone is the coal and ash dust, I can hang the clothes near the furnace and they stay clean. It's so 'livable' in the basement, we plan to put in a recreation room."



"I was on strike! I refused to shovel coal into a hungry hopper after I found out about the 'O.P.' coal burner. Why, it feeds the coal from bin to furnace automatically!"

The Coal Burner



"I'm throwing away these clinker tongs! Just think—no clinkers to dig—nor ashes to shovel! 'O.P.' has a marvelous ash removal feature that empties the ashes into a dust-proof container!"



"What a break for the budget! Our 'O.P.' burns inexpensive screenings as well as regular stoker coals."

"O.P." COAL BURNER

"You can't beat 'O.P.' for comfort! The Minneapolis-Honeywell controls, along with the even heat of coal, keep the house at just the right temperature for comfortable, healthful living."



Mrs. America is asking for— **ORIGINAL POCAHONTAS**



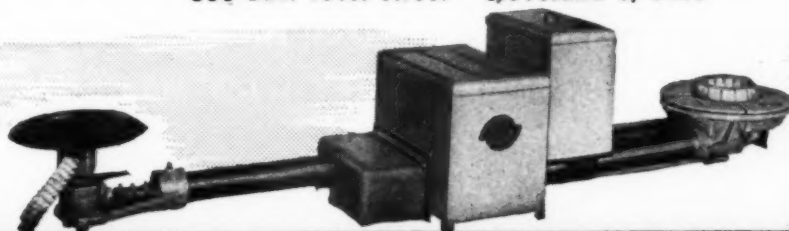
Today the "lady of the house" insists on *fully automatic* coal heat. And she knows she can get it—with an "O.P." Coal Burner—successor to the stoker.

For more than 11 years—over the tea cups, the back fences, and the bridge tables—thousands of satisfied "O.P." owners have been passing along the good word. Newspaper and magazine promotion has also helped create this demand for the "Original Pocahontas" completely-automatic coal burner.

This ready-and-waiting market for fully automatic coal heat is all yours, Mr. Dealer. Sign an exclusive "O.P." Franchise and you can depend on present and future sales, profit, and security.

Write now for complete information on the sales advantages of "O.P." equipment.

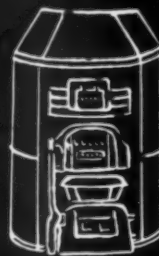
POCAHONTAS FUEL COMPANY INCORPORATED
 338 East 131st Street • Cleveland 8, Ohio



**THE FIRST SUCCESSFUL BITUMINOUS
 BIN-FEED ASH REMOVAL COAL BURNER
 ... SUCCESSOR TO THE STOKER**

WILLIAMSON

WARM AIR HEATING



Established in 1890.

The Williamson Heater Company has enjoyed fifty-six years of ever growing friendships and business volume.

This growth, we believe, is due in great measure to the high standards of excellence maintained in Williamson Products and our everlasting effort to render an important service.

But of equal value, has been the constantly loyal friendships and the cooperation of Distributor and Local Contracting Dealer, throughout the years.

To merit this splendid friendship and your continued business is the firm goal of the Williamson Organization.

THE WILLIAMSON HEATER CO., CINCINNATI 9, OHIO

will YOU profit on the heating of those new homes now building?

Sell

"DETROIT"

**FLOAT VALVE
EQUIPPED**



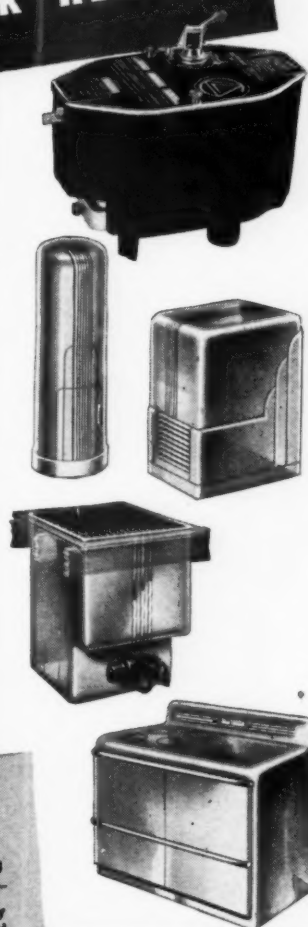
**FURNACES, SPACE HEATERS,
RANGES, WATER HEATERS**

Home building, particularly in the small and medium sizes is expanding enormously.

You can profit from this building by selling "Detroit" Float Valve equipped furnaces, space heaters, ranges and water heaters. These heating devices satisfy the almost universal desire for clean, economical heat—at a first cost within reach of these home builders.

"Detroit" Float Valves have had the highest standing in the industry for two decades—because they are sturdy, reliable, long lasting. Simple and easy to service, they help in keeping down service calls.

Look for these valves on the heaters you sell—they are evidence of care in manufacture.



2094

DETROIT LUBRICATOR COMPANY General Offices: 5900 TRUMBULL AVENUE
DETROIT 8, MICHIGAN
Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION
Canadian Representatives: Railway and Engineering Specialties Limited, Montreal, Toronto, Winnipeg



"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety
Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and
Refrigeration Accessories • Stationary and Locomotive Lubricators

Here are the Answers

TO YOUR STAINLESS STEEL FABRICATING QUESTIONS

Whether your questions concern the correct procedure for soldering of stainless steel, as shown below, or have to do with complex forming and welding operations, you will find their concise, easy-to-understand answers in the two helpful books, illustrated at the left.

In addition to detailed information and recommendations on the various methods of fabricating and welding stainless steel, both of these books contain informative diagrams and useful tables which will assist you in your work.

Thousands of these books already have been distributed to sheet metal contractors and stainless steel users throughout the country. If you have not received yours, or if they have been lost or mislaid, write for your FREE copies of either or both *today*.

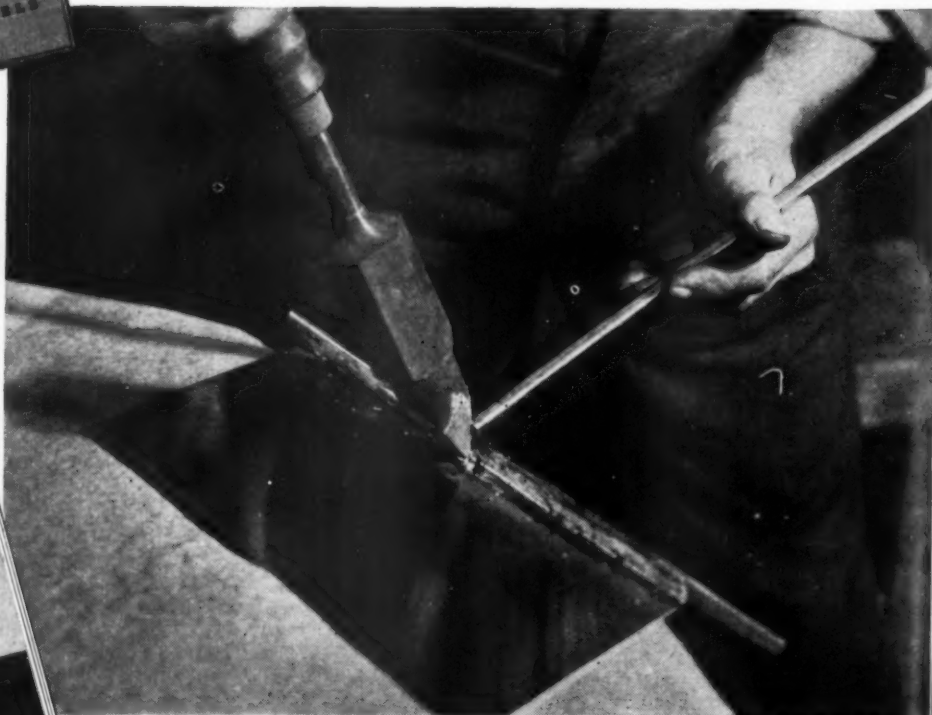
REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

GENERAL OFFICES

CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, N. Y.



Soldering is only one of many subjects covered in the booklet on fabrication.

Republic



ENDURO STAINLESS STEEL

Reg. U. S. Pat. Off.

Other Republic Products include Black, Polymetalized, Galvalume and Electro Painted Sheets—Tensar Iron Sheets

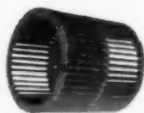
HEAT... where You Need it — and when You Need it!

Use CLARAGE Unitherms in any Type of Industrial Building

Besides cutting fuel costs, Clarage Unit Heaters will help your plant maintain *top-level production* so dependent upon healthy, comfortable temperatures.

If you're still using wasteful coils, cast iron radiation, or obsolete unit heaters — investigate the features of our Unitherm Units!

FEATURES!



Centrifugal fans



V-belt Drive

(1) Syncrotherm Control (exclusive improvement) maintains uniform temperatures with relatively **LOW TEMPERATURE**

AIR — lower operating costs. (2) Centrifugal fans — one for each heater outlet — delivering heat over wide areas. (3) Square outlets for easy adjustment to four directions of heat flow. (4) V-belt drive insures quieter operation, greater flexibility of fan speed. (5) Every part accessible by removing front or back section of casing . . . Built in liberal range of sizes, operating on steam or hot water.



Adjustable Square Outlets

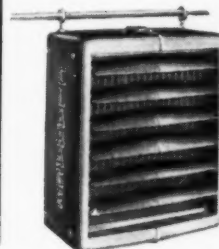


SUSPENDED UNITHERMS — save valuable floor space. Same design as floor type units, including bent-tube safety coil construction.

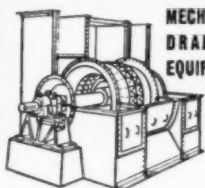
One of over 100 floor type Unitherm Heaters installed in steel plant. This company has re-ordered eight times. Yes, Clarage Unitherms do the job!

And for Smaller Jobs

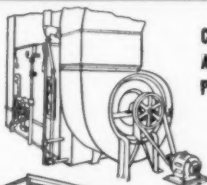
Clarco Unit Heaters (at right) are for small space heating, and for "spots" where more heat is needed than present equipment can supply. Exceptionally quiet — ideal for offices and stores as well as factory service. Wide range of sizes, using steam or hot water.



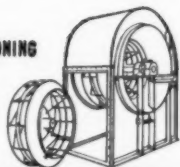
SOME OF OUR OTHER PRODUCTS



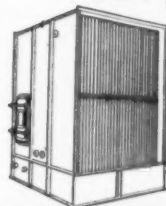
MECHANICAL DRAFT EQUIPMENT



CENTRAL STATION AIR CONDITIONING PLANTS



AIR CONDITIONING AND VENTILATING FANS



AIR WASHERS

Sorry, but the large volume of orders already accepted prevents deliveries for 1946 heating season. We would, however, appreciate an opportunity to figure your future unit heater requirements.

CLARAGE

FAN COMPANY

Kalamazoo, Michigan

APPLICATION ENGINEERING OFFICES
IN ALL PRINCIPAL CITIES

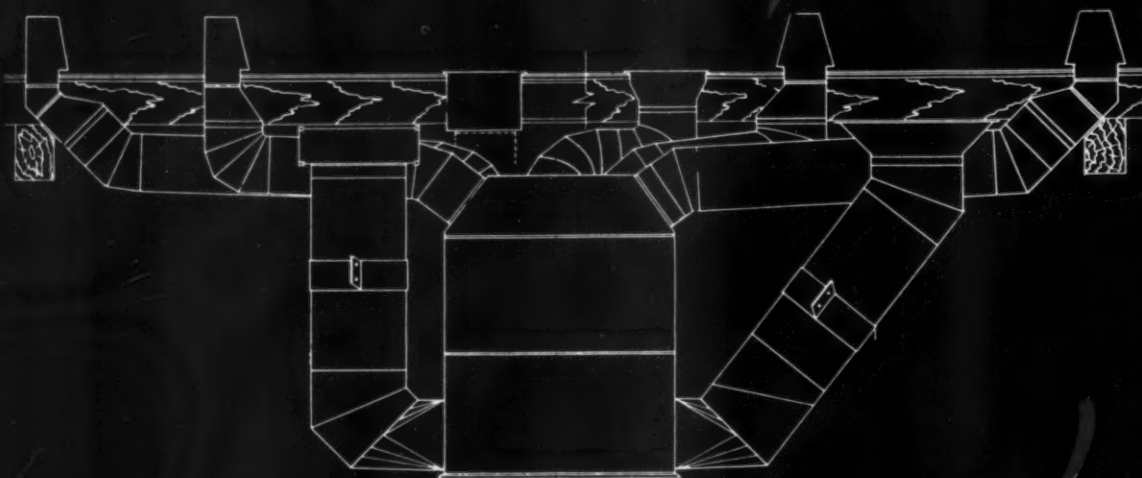


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C & L

LAMNECK

FOR YOUR FALL INSTALLATIONS



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Monarch builders finish hardware, panic exit devices
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During the Fall rush you'll doubly appreciate the superior engineering and accurate design of C & L Lamneck furnace pipe and fittings. They're made right — and stay right — providing a dependable, longer life of outstanding performance.

Your jobber receives C & L Lamneck pipe and fittings just as fast as our steel stocks will permit, and he'll do his best to supply your requirements promptly.

Write for your copy of the C & L Lamneck simplified catalog.



Lamneck

**FURNACE PIPE
AND FITTINGS**

CLAYTON & LAMBERT MFG. CO.

Sales Office, Louisville 10, Ky. ★ Factory, Middletown, Ohio

comfort-safety - control



WINTER SUMMER

Meeting today's demands for year round comfort and safety, the Perflex Combination Fan and Limit Control regulates warm air flow in the winter and permits circulation of cool air in the summer. It combines the functions of warm air limit control and fan control in a single unit with definite superior advantages. Separate "on" and "off" settings for both fan switch and limit control provide accurate, easy and convenient regulation for the most flexible control of each individual heating plant. Conversion to summer ventilating or winter heating is quickly and simply made by turning external knob — thus eliminating annual need for resetting or balancing of heating plant. The initial adjustment is the only adjustment.

The Perflex policy is to provide the finest in research developed, precision engineered Controls for manufacturers of leading automatic heating equipment... an important reason why these leaders brand Perflex Twin Contact Controls with their trade-mark name.

PERFEX CORPORATION, MILWAUKEE 7, WIS.
Perflex Controls, Ltd., Toronto, Canada

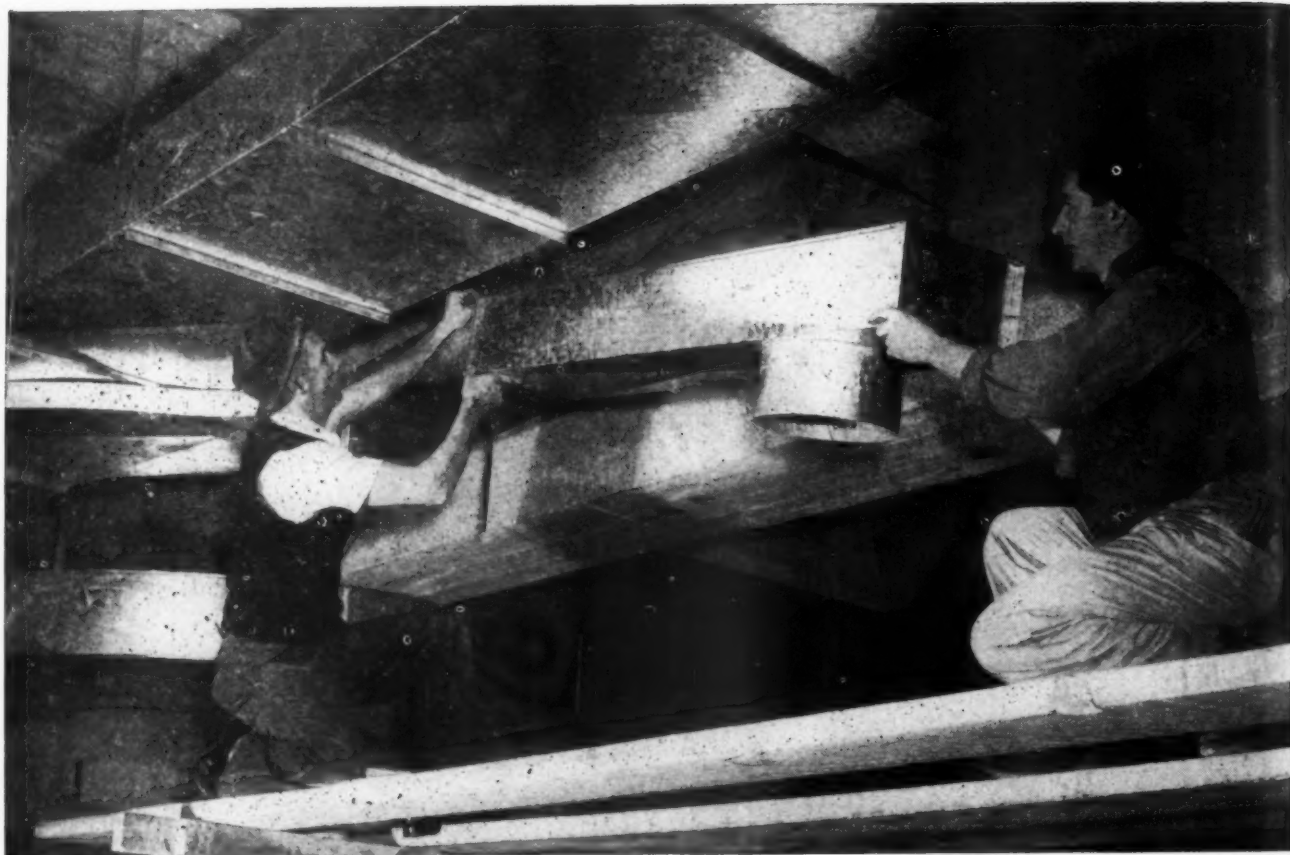
outstanding features



- Exclusive Twin Contact mechanism assures positive contact, snap-action and magnetic acceleration.
- Seasonal change-over is fast, by external knob adjustment — without disturbing fan or limit switch settings.
- Dial rotates — visibly indicating bonnet temperature.
- Combination control is easily installed — mountable in any position.

PERFEX
TWIN CONTACT CONTROLS

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE MARK NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS AND APPLIANCES



Here's a market that's 97% untapped

An estimated 97 per cent of the nation's potential air-conditioning market remains to be developed and sold.

On this basis additional air-conditioning equipment totalling around 45 million hp capacity will have to be installed before the demand is fully satisfied.

That means a lot of work for manufacturers of air-conditioning equipment . . . and the installation of many miles of ductwork for central-station air-conditioning systems. To be satisfactory these ducts must combat the corrosive effects of circulating air that may be alternately humidified or dehumidified, heated or cooled, depending on weather conditions.

Beth-Cu-Loy Galvanized Sheets have the corrosion-resistance needed for this work. Their 0.20 to 0.30 per cent copper content gives these sheets from two to three times the corrosion-resistance of ordinary sheet steel or iron. And the uniform zinc coating of Beth-Cu-Loy Sheets forms a tight, protective armor that offers rust no starting point.

Another Beth-Cu-Loy advantage is high ductility. Beth-Cu-Loy takes readily to the brake, to hammering, to cutting and to soldering. You will get clean, workmanlike ducts every time with Beth-Cu-Loy. Use it on your next central-station air-conditioning job.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

Beth-Cu-Loy Galvanized Sheets



Announcing

The New Type 101 Mueller Climatrol Steel Gas-Fired Gravity Furnace



A handsome, efficient, easy-to-sell gas furnace

Today, your customers demand clean, convenient, comfortable heat — furnished efficiently and economically. You can satisfy that demand completely with the new Mueller Climatrol Type 101 Gas Gravity Furnace.

Specifically designed for gas, this new Climatrol Furnace guarantees clean, dust-and-dirt-free heat. Temperature is maintained at a constant comfort-level throughout the heating season by completely automatic thermostatic controls. Burner, heat exchanger and controls are designed and constructed

to operate at maximum efficiency — to deliver the utmost comfort with satisfying economy.

The up-to-the-minute appearance of the new Climatrol Furnace is a real selling feature. Available in two sizes — 90,000 and 135,000 maximum B.t.u. input — it is AGA approved for operation with natural, mixed, manufactured, or liquid petroleum gas, and for high-altitude installation.

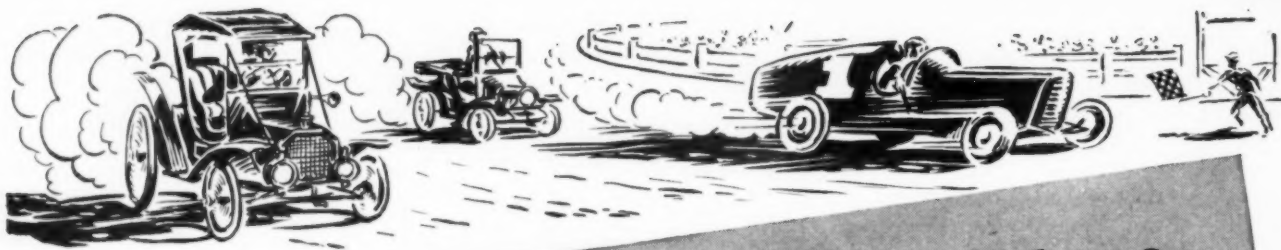
Write for complete details.

L. J. Mueller Furnace Co.
2010 West Oklahoma Ave. • Milwaukee 7, Wis.



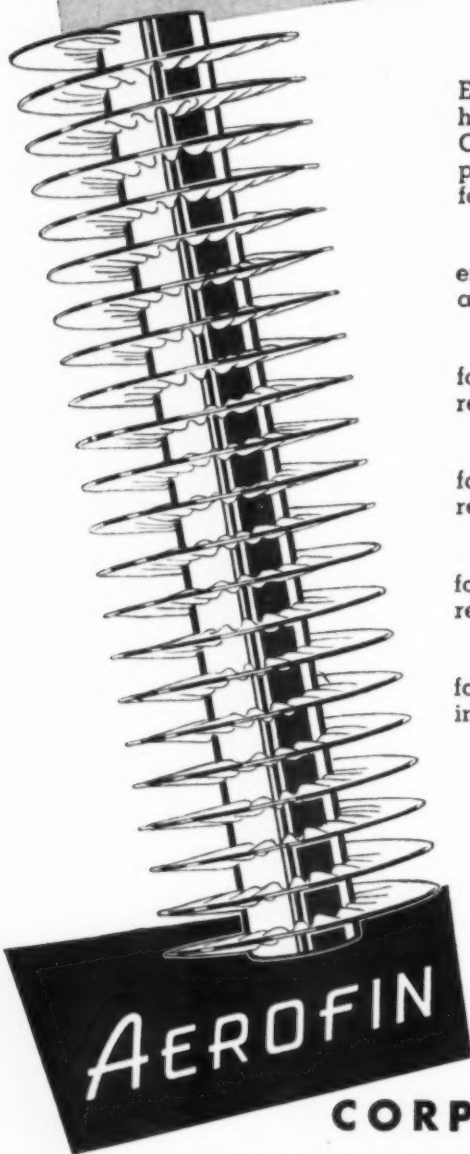
MUELLER
Climatrol

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**You're Way Ahead If You Have
the **RIGHT EQUIPMENT**
for the Job!**

**Aerofin's Dependable Engineering
is Your GUARANTEE**



FLEXITUBE AEROFIN FOR STEAM HEATING

Each tube built to expand and contract independently, thus relieving headers, tubes and tube joints of strains due to temperature changes. Crowned orifice insures equal steam distribution to each tube and prevents freezing due to clogging of tubes by scale and other foreign matter.

NON-FREEZE AEROFIN COIL

embodies all of the features of Aerofin Flexitube, plus non-stratifying and non-freeze features for any entering air conditions.

UNIVERSAL AND HIGH PRESSURE AEROFIN

for steam heating where a heavy coil of rugged construction is required.

CONTINUOUS TUBE WATER COIL

for cooling or heating with water, brine or other non-volatile refrigerants.

REMOVABLE HEADER WATER COIL

for same duties as Continuous Tube Coil, with added feature of removable header for complete cleaning and draining of each tube.

DIRECT EXPANSION COOLING COIL

for cooling with volatile refrigerant. Patented distributing headers insure perfect distribution for all loads.

SPECIAL COILS FOR SPECIAL APPLICATIONS

For long, trouble-free, low-cost service select the *right* type, design, size and material. Aerofin units are insurance against costly changes and repairs:

Metallic bond of fin and tube is not injured by expansion or contraction. Rigid material specifications and inspections assure quality that maintains Aerofin's dependable ratings.

Special coatings or non-corroding metals can be furnished to prevent chemical damage.

For highest practical heat exchange, over 100,000,000 feet of Aerofin have been installed.

**CALL IN AN EXPERIENCED AEROFIN FIELD ENGINEER
FOR THE WHOLE STORY ON HEAT EXCHANGE.**

CORPORATION

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Department 930
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Please send me, without charge, one Fall DUST-STOP Promotion Kit, No. D46-22.

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...for your Fall DUST-STOP* Promotion Kit!

It's September again. Time to push replacement filters for warm-air furnaces. Time to contact all your old customers—and, incidentally, line up some profitable service business—with timely DUST-STOP selling helps.

Yes, your Fall DUST-STOP Promotion Kit



is ready and waiting. In fact, we'd suggest you act promptly to assure your getting this complete selling kit. In it, you'll find envelope enclosures, counter literature, effective mailing pieces, colorful display material. Also, blower-compartment stickers and the handy "filter-size" catalog—all yours, FREE for the asking.

If you haven't handled DUST-STOPS in the past, we'd suggest you investigate their profit potentialities in your community. Contact your distributor today . . . or write Owens-Corning Fiberglas Corporation, Dept. 930, Toledo 1, Ohio.

In Canada, Fiberglas Canada Ltd., Toronto, Ontario.

**OWENS-CORNING
FIBERGLAS CORPORATION**

"Your partner whose Actions speak louder than words"



A NEW automatic water heater

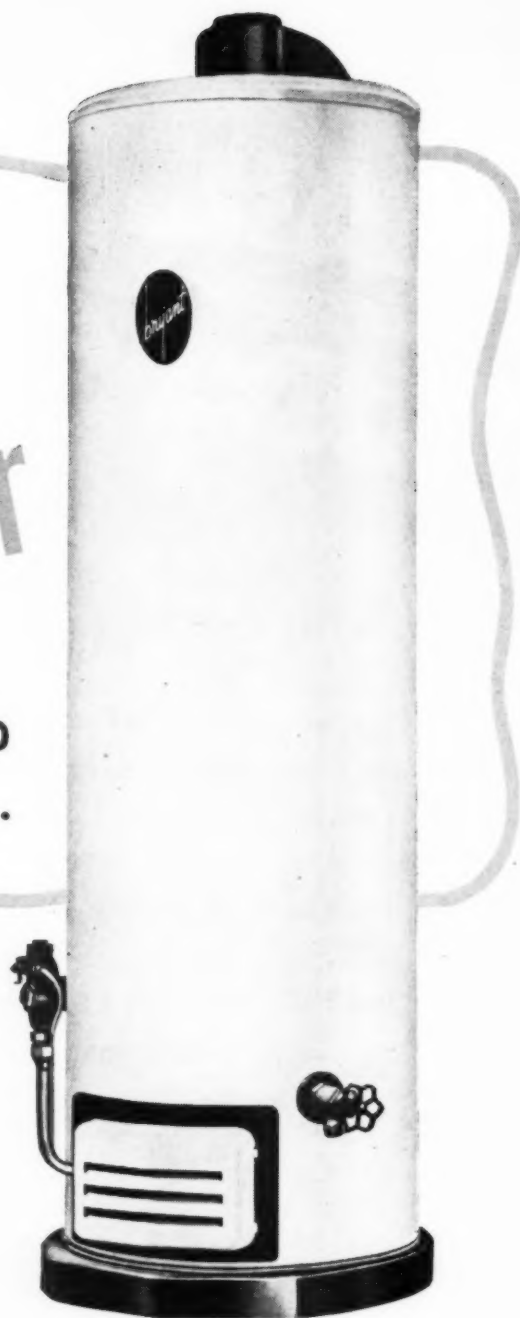
TO MEET 1946 BUILDING AND
MODERNIZATION BUDGETS...

• Eagerly awaited since its announcement several months ago, the new Bryant Model 105 Automatic Storage Water Heater is now in production. This popular-priced unit, because of its many distinctive features, will set new standards of quality and performance while serving America's new and modernized homes.

Attractive in its gleaming white finish, the Model 105 is completely automatic, thermostatically controlled. It is rigidly constructed for long life and dependable operation, super-insulated for heating efficiency. The "Bryalite" Automatic Safety Pilot, a Bryant engineering achievement, provides easy, safe lighting . . . shuts off the gas to burner should the pilot light go out. The specially-designed stainless steel burner operates quietly, resists corrosion and stoppage from dust or dirt. Segmental baffles inside the heating section utilize *all* the heat by directing it against the heating surface.

These and many other features make the Model 105 Automatic Water Heater highly desired equipment in any new or modernized home . . . a proudly-presented newcomer to the famous line of Bryant automatic gas-fired heating equipment.

BRYANT HEATER COMPANY
17825 St. Clair Ave., Cleveland 10, Ohio
One of the Dresser Industries



bryant
GAS
HEATING



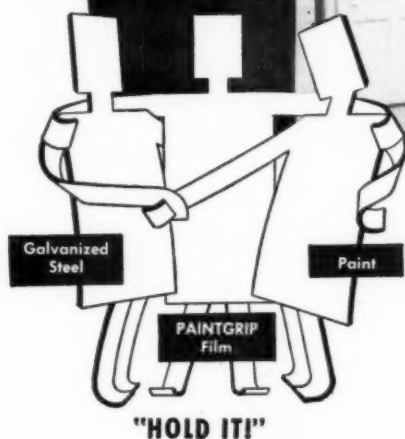
LET THE PUP BE FURNACE MAN

The most complete line of gas heating equipment in the nation!

Paint and Galvanized Steel *Can* Be Good Friends



Thanks to the mill-Bonderized film on this ARMCO Galvanized PAINTGRIP roof drainage system, the original paint finish is "sticking to the job" after eight years' service.



The sheet metal contractor installed this roof drainage system back in 1938. Then the painters went right to work—no need to acid-etch the galvanized coating, or wait for it to weather.

Today—eight years later—the galvanized steel and paint are getting along fine together . . . because the

ARMCO PAINTGRIP film, applied to the galvanized sheets before they left the steel mill, provided a neutral surface for paint. There's no drying out or peeling of paint due to attack by the zinc.

Naturally the home owner is well-pleased. And you can see why he and his friends ask the sheet metal contractor for PAINTGRIP whenever they need roofing, furnace casing, air ducts.

This is the way sheet metal men everywhere win and hold good customers with high-quality work and ARMCO Galvanized PAINTGRIP Sheets.

Stocks of PAINTGRIP are "tight" now. But keep in close touch with your Armco Distributor. He—and we—are

bending every effort to supply you with this and other Armco special-purpose sheets. The American Rolling Mill Co., 4321 Curtis Street, Middletown, Ohio.

EXPORT: THE ARMCO INTERNATIONAL CORPORATION

MORE SCRAP

MEANS MORE STEELS

We urge you to collect every pound of iron and steel scrap, including unused and obsolete equipment. Speed it to the steel industry through your regular channels. Present high production cannot be maintained unless more scrap is shipped to the mills promptly. The situation is critical.



THE AMERICAN ROLLING MILL COMPANY

Special-Purpose Sheet Steels • Stainless Steel Sheets, Bars and Wire

Save time! Save Money!

**with MAYN AIR
STACKHEAD
DAMPERS**



Mayn Air Damper in stackhead eliminates Dampers in basement ducts.

**8 REASONS WHY FURNACE
DEALERS SAY MAYN AIR *First***

1. Lower in cost than old style dampers.
2. Positive in control.
3. Locks automatically.
4. Tamper proof—special tool locks damper.
5. Rattle proof—noiseless.
6. Quick and easy to install.
7. One man balances system.
8. Saves you money in three ways—cost of damper—cost of installing—cost of balancing.

Moncrief's Forced Air Stackheads with factory installed Mayn Air Dampers save you time and make you money—Now Ready for Shipment!

MONCRIEF'S SUREFIT FITTINGS

THEY'RE DIE STAMPED . . . MACHINE MADE



With Moncrief's complete line of SUREFIT FITTINGS you get . . . streamlined production . . .
save time . . . save money . . . increase profits

THE HENRY FURNACE COMPANY

Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

MONCRIEF
SINCE 1895

FURNACE PIPE AND FITTINGS

THERE IS A LOCKFORMER MODEL FOR EVERY TYPE AND SIZE OF SHOP

Model 24 — for small shops or for "on-the-job" portability.

Model 24 shown with Power Flanger Attachment.

Model 10—Heavy capacity portable 12" gauge.

Model 20—for general duty service, 5/16" pocket. . . shown with Power Flanger Attachment. (Model 22 at upper right).

Model 10—Extra heavy capacity 12" gauge.

Easy Swager—No gauges to set, forms up flange in one operation, right or left hand operation.

Lockformer Model Numbers indicate gauge capacity.

One or more of these Lockformers are *exactly* suited to *your* shop—suited as to capacity, and suited to fit *your* budget. Get the model big enough to handle *your* work, but don't pay for power you don't need or capacities seldom if ever required. .

THE LOCKFORMER CO.
4615 ARTHINGTON STREET • CHICAGO 44, ILLINOIS

The **BEST of BOTH** GIVE 'EM WHAT THEY WANT!



Gas-A-Fire *Stok-A-Fire*

People are sold on automatic heating. Some prefer stokers . . . others prefer gas. From us, you can obtain the BEST of BOTH. EVERY prospect will be a buyer when you offer the BEST of its kind in automatic heating. Write or wire TODAY for details.

Gas-A-Fire

GAS CONVERSION BURNER

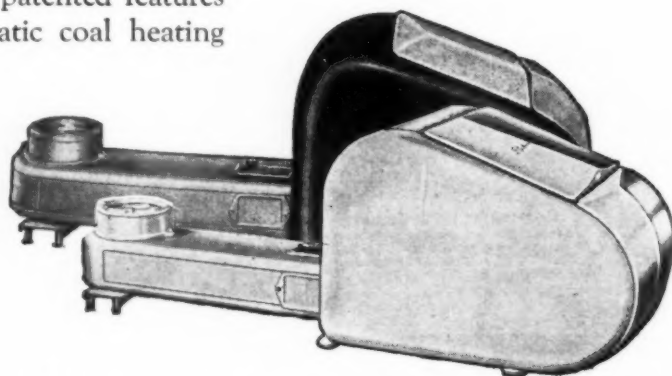
converts any boiler or furnace into a heating unit offering the latest improvements in automatic gas "Heat as clean as a Sunbeam."

The DeLuxe Stok-A-Fire

a quality-built stoker with exclusive patented features that combine the utmost in automatic coal heating satisfaction with fuel economy.

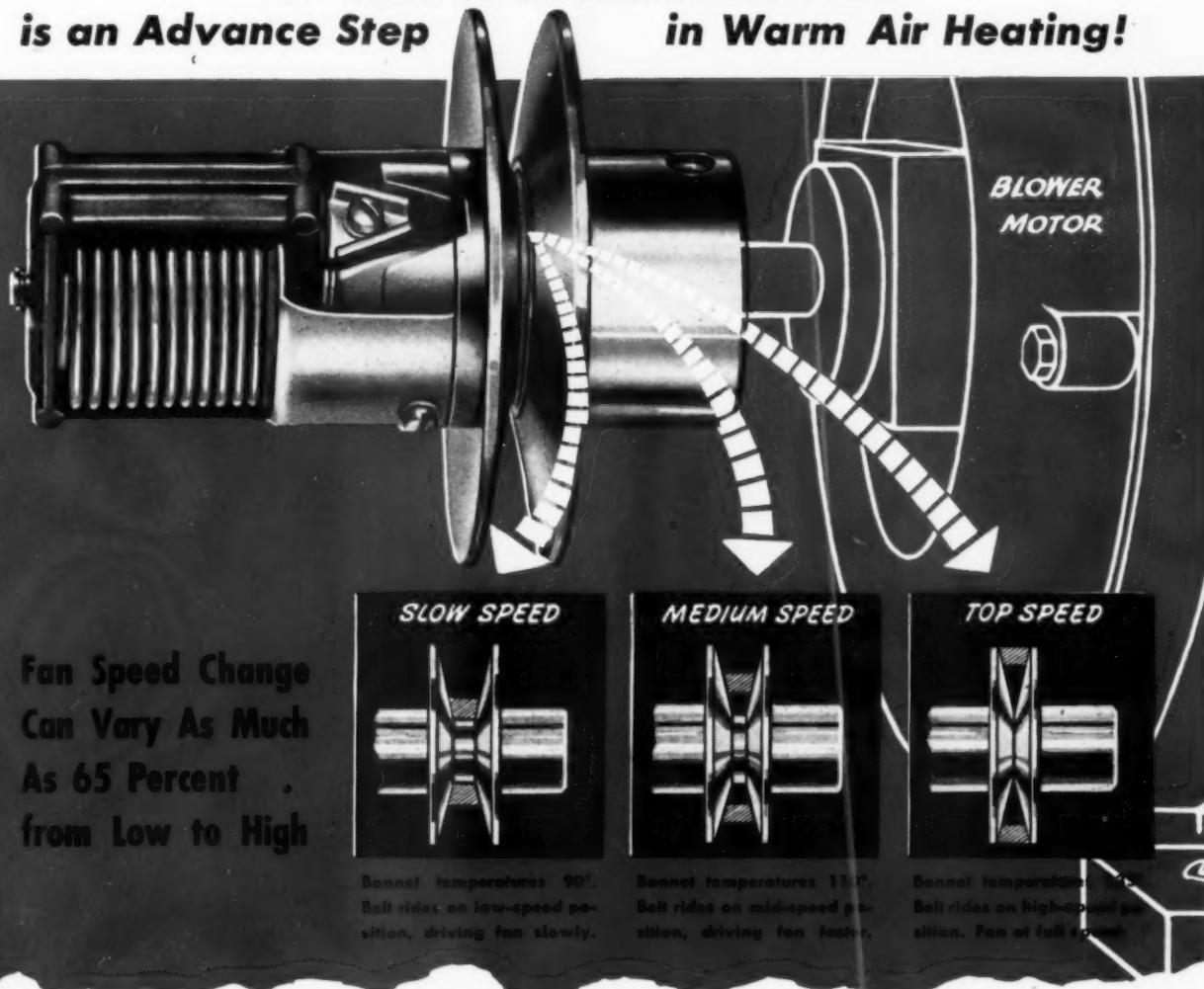
The White DeLuxe *Stok-A-Fire*

the aristocrat of stokers. Gleaming white enameled beauty plus all the outstanding features of the DeLuxe model.



Stok-A-Fire Co. 6504 OLIVE BLVD. • ST. LOUIS 5, MO.

WEBSTER ELECTRIC
THE NEW WEBSTER ELECTRIC Thermodrive
for Control of Warm Air Flow
is an Advance Step in Warm Air Heating!



Thermodrive offers both improvement for new equipment and a large conversion market.

Manufacturers will find by including Thermodrive they will improve their product and add a new important selling feature.

Those dealers selling to home owners will find that every present owner of a warm air heating system is a definite prospect for the added comfort provided by Thermodrive—this is an important, profitable market.

Thermodrive is designed to regulate warm air flow through control of fan speed in a forced warm air heating system so as to give more even room tem-

peratures, along with more economical heating performance.

It is attached to the blower motor in place of the usual fixed pulley. A sample of warm air is continuously taken from the bonnet and discharged over a thermostatic bellows, which in turn actuates a sliding sheave, as shown above. This changes the pulley's effective diameter and results in varying the rate of warm air flow, in accordance with bonnet temperatures.

Be sure to secure the complete story on this new equipment. Write Webster Electric Company, Racine, Wisconsin.

WEBSTER  **ELECTRIC**
RACINE **WISCONSIN**

Established 1909

Export Dept. 13 E. 40th Street, New York (16), N. Y. Cable Address "ARLAB" New York City

"WHERE QUALITY IS A RESPONSIBILITY AND FAIR DEALING AN OBLIGATION"

*TOP QUALITY -
One thing we always guarantee*

PACKARD SUNLIGHT MOTORS



Right now we can't guarantee prompt delivery for any new orders. But we can—and do—guarantee that every Packard Sunlight motor made is a fine product, built to the highest-quality standards. That's always been the way with Packard Sunlight motors—and it always will be.

Packard
REG. U.S. PAT. OFF.
TRADE MARK

Packard Electric Division, General Motors Corporation, Warren, Ohio

PACKARD SUNLIGHT MOTORS for: compressors . . . washing machines . . . power-driven bench tools . . . ironers . . . milk separators . . . milking machines . . . furnace blowers . . . stokers . . . oil burners . . . water pumps . . . ventilators . . . and many other applications.

DEPENDABLE APPLIANCE MOTORS FOR THIRTY YEARS

FOR USERS (AND POTENTIAL USERS) OF Resistance Welding



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If you are interested in the possibilities and scope of the various phases of *Resistance Welding*, you will want to receive these Sciaky bulletins: "Resistance Welding at Work." They are brief, informative and pictorial, and for the most part are devoted to step-by-step analyses of interesting production problems solved by spot, seam or flash welding.

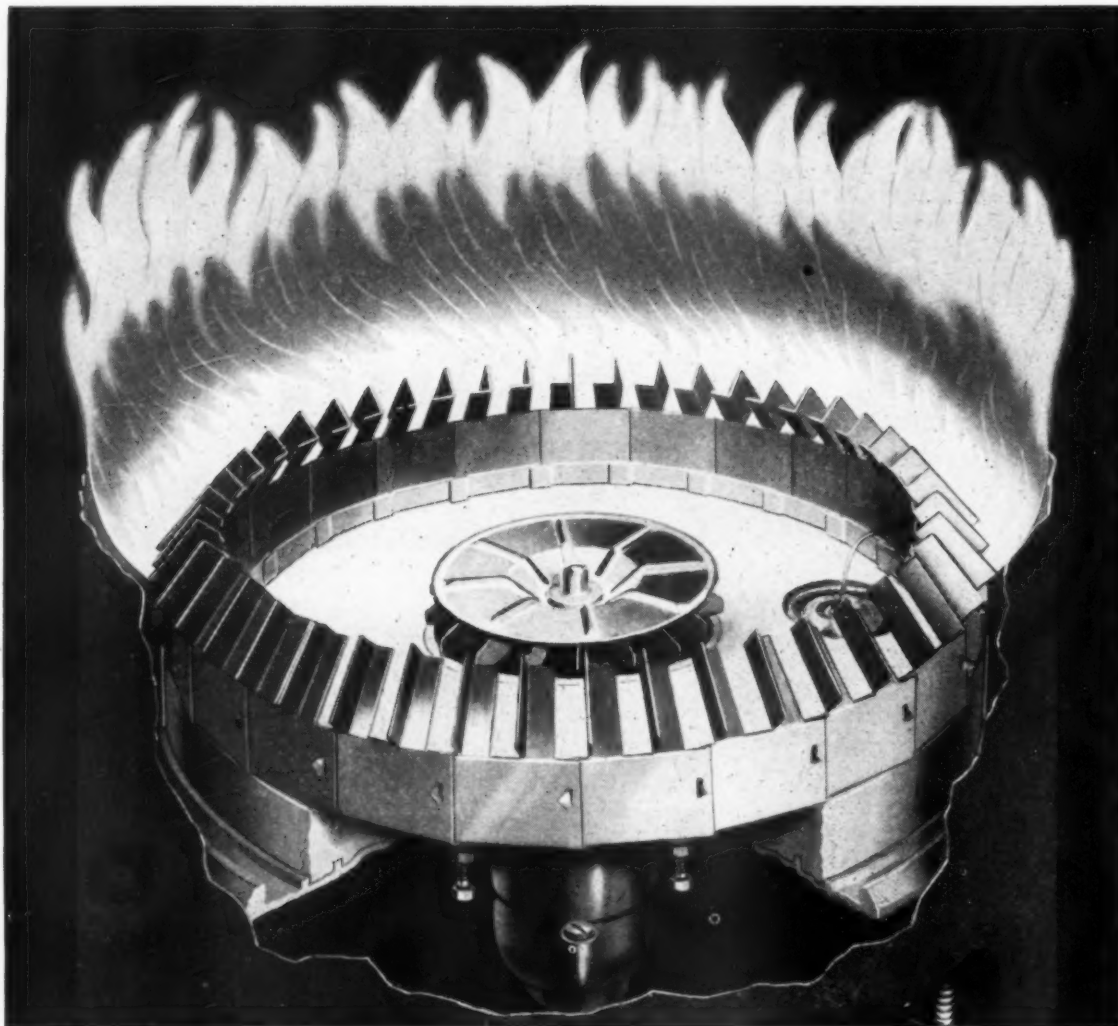
"Resistance Welding at Work" is issued periodically and is free of charge. We will be glad to place your name on our mailing list. Just fill out and mail the coupon below.

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THE *Toridheet* ROTARY



Its Reputation Grows thru Performance — not thru words

There are hundreds, yes thousands, of keen dealers in the oil heating business who respect the name TORIDHEET for no other reason than the fact that they've always heard that it is a *good*—yes, a mighty *fine* oil burner! We are proud of that reputation.

There are thousands of dealers who say the Toridheet Rotary has high heating efficiency, plus spectacular *economy*. Those are the men who know

from experience—their own experience and that of their customers.

What all of them think is of the utmost importance. But the opinions of those people who rely upon Toridheet Rotary for winter comfort, and the opinions of the dealers who sell Toridheet are of high importance. For what *they* think is built upon *performance*—and performance is the base upon which reputation feeds and grows.

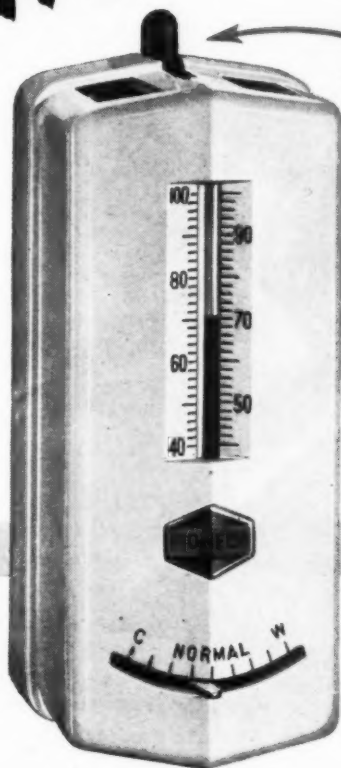
TORIDHEET DIVISION

CLEVELAND STEEL PRODUCTS CORPORATION, CLEVELAND 2, OHIO

Affiliated Canadian Manufacturers: Conroy Manufacturing Company, Ltd., Catharine St., St. Catharines, Ont.

**OIL BURNERS • OIL BURNER BOILERS • OIL WATER HEATERS
AIR CONDITIONING UNITS • COAL AND GAS FURNACES**

THE PIONEER Heat Regulator



with the
little red light

Any Good Damper Regularor Set Brings:

1. Convenience
2. Comfort
3. Economy
4. Health
5. Safety

with solid fuel

PIONEER Controls Also Provide:

6. Red Signal Light
7. Short-Circuit Proof Transformer
8. Heat-Anticipating Thermostat
9. Exceptionally Quiet Operation
10. Unusually Liberal Guarantee
11. Unique Type All-Weather Control
 - (a) High Limit for Safety
 - (b) Low Limit to Hold Fire in Mild Weather
12. Spring Return Damper Motor Available for Power Failure Protection
13. And many significant construction features perfected over a period of 19 years.

write for information to -

THE MASTER ELECTRIC COMPANY

DAYTON 1, OHIO

QUALITY APPARATUS—LASTING SATISFACTION
No other addition to home equipment will add so much for so little





NEXT-DOOR service on steel

Quick delivery to your plant or job

ELEVEN Ryerson Steel-Service Plants provide unmatched facilities virtually next door to every steel user in the principal markets of the United States. Though many sizes are missing because of the steel shortage, each plant has large, diversified stocks. Each is backed up by the inventories and facilities of the others. These strategically-located steel stocks plus modern high speed equipment are your assurance that orders will be filled accurately and promptly.

Ryerson metallurgists and engineers provide reliable help in solving problems of selection and fabrication. Questions of heat treatment are answered by the hardenability report sent with each Ryerson alloy shipment.

Complete, trouble-saving service on steel from

stock is available to you at every plant in the Ryerson network. When you need steel of any kind call Ryerson.

Joseph T. Ryerson & Son, Inc., Steel-Service Plants: Chicago, Milwaukee, St. Louis, Detroit, Cincinnati, Cleveland, Buffalo, Pittsburgh, Philadelphia, New York, Boston.

PRINCIPAL PRODUCTS

Carbon and Alloy Steels, Allegheny Stainless, Tool Steel, Bars, Plates, Sheets, Structurals, Mechanical Tubing, Inland 4-Way Floor Plate, Reinforcing Bars and Accessories, Boiler Tubes, Welding Rod, Babbitt, Bolts, Rivets, Metal Working Tools & Machinery, etc.

RYERSON STEEL



American Artisan

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING

Latest Housing Order Restricts Furnace Sales

THE official text of the Wyatt "set-aside" order for construction products has not been received as this editorial is written, but a summary received states that as of September 1 manufacturers and jobbers of furnaces, oil burners, stokers, fuel oil tanks are directed to "set-aside"—*indefinitely*—75 per cent of all their production (manufacturers) or receipts (jobbers) of these products for orders carrying HH, CC, MM, AAA priority ratings.

The previous set aside order specified a holding period of 21 days.

It is not known whether furnace pipe and fittings, smoke pipe, registers and grilles, etc., are also included in the order.

In view of the muddled situation in veteran housing it would seem at first glance that this "set-aside" order only adds to the confusion which exists.

The order apparently means that after September 1 jobbers may not sell to dealers, for replacement purposes, more than 25 per cent of the furnaces received; the remaining 75 per cent of all furnaces received must be held *indefinitely* for dealers' orders for veteran housing. No exceptions are included, we are told, for a dealer located in an area where there is no veteran housing or only a few veteran houses, but where there does exist a great demand for replacement furnaces.

Drastic and impractical as this order may seem at first reading, the order becomes even more disturbing when it is interpreted in terms of actual production figures. For instance:

For the first six months of 1946 there were produced 264,397 warm air furnaces of all types. Production in June (the last month of the six) was 49,337 furnaces according to Bureau of Census. Production for July was estimated at 55,000 furnaces of all types. Department of Commerce added that "manufacturers are reporting improvements in the flow of raw materials, but a shortage of labor" and "it is anticipated that steel and pig iron priorities will be reflected in increased production late in the third quarter."

Assuming that furnace production does hold at 55,000 furnaces per month for the remainder of 1946, this means 220,000 furnaces during September, October, November, December.

According to the "set-aside" order, 75 per cent of these, or 165,000 furnaces must be held *indefinitely* by jobbers and manufacturers for CC, HH, MM, AAA rated orders on veteran housing, etc. That will leave during the four months only 55,000 furnaces available for replacement purposes.

This drastic order does not make sense in the light of the actual records in veteran housing. Very briefly, the Veteran Housing Program reports 225,000 units *completed* during the first seven months of 1946. Of these 153,000 units are new permanent houses and apartments and 72,000 are trailers, huts, etc. Worse yet, of the 153,000 permanent units, 113,000 units were *started* in 1945, so, as of July 31, VHP has *completed* only 40,000 which were started in 1946.

On this basis, and making assumptions of course, VHP program can expect only *completion* of fewer than 10,000 permanent housing units per month during September, October, November and December.

Yet Wyatt is asking our industry to "set-aside" 165,000 furnaces for less than 50,000 houses to be completed.

There are many other angles which bear remembering: (1) There were, it is true, 496,000 permanent *starts* in the first six months; (2) if furnaces were the only product which prevented all these "starts" from being "completions" there would be some reason for this set-aside order, but everyone knows that there are literally dozens of products which are not available; (3) the number of applications for permits to build has been falling off in July and August and will decrease greatly in the fourth quarter because builders are finding the headaches too great; (4) a very high percentage of applications request winter air conditioning with gas and oil and many thousands of these units have been installed without the burner and without the blower motor—what these owners are going to do this winter is an interesting question; (5) finally, problems which were not encountered earlier are now cropping up to still further slow down completions.

This is a brief summary of this latest order. So far it does not look good—doesn't even look sensible. It will behoove every reader to analyze his position and make plans for operating under such an order if it is enforced.

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Arnold Kruckman's

Washington Letter

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



Washington Viewed From The Outside

THIS is written in the city at the northwesternmost tip of Continental United States—Seattle. Your correspondent has reached here after traveling well over 6,000 miles, visiting upwards of ten cities and towns in the South, the Southwest and the West Coast for the purpose of finding out how the activities in the District of Columbia impress business people. Well over 200 persons have been interviewed where they live, or in hotels or trains, among whom were a dozen makers of furnaces and sheet metal fabricators. All, regardless of business or trade, are absolutely unanimous in their utter lack of confidence in the present Administration and the agencies in Washington, D. C., and in their irritation over the gyrations of Congress. Exactly 96.2 per cent want Government to continue controls over prices, allocations, and other functions of business. They want Government to act as umpire because they have not been able to determine where to find another arbiter. As will be seen later, a move is now under way to constitute the various parts of the national economy themselves as the units which shall formulate the method of administering the controls.

As you go West, the business people become more and more hopeless about finding an answer to the present muddle and ineptitude. They say harsh things about waste, about useless spending of the funds they put into the Federal Treasury as taxes, and about the bureaucrats and politicians; they regard Truman as one of the most futile Presidents ever to occupy the office. They think Government is clumsy, stumbling over its own feet, as it were, and they have practically no respect for the Government officials with whom they do business in Washington or in the field. But it is curious to find very few business people who think there is much dishonesty in Government. They take it for granted there are petty peculations—petty in relation to the vast transactions of Government—and that there are grafters and fixers and fixees; they realize that the man who knows somebody, who knows somebody else, who is a friend of someone closer to the Brass, probably will get what he needs or wants much faster than the average business man who has no friends in official quarters. They seem to accept that condition with patience as a natural concomitant of

our sort of Government. The majority apparently feel that if they had similar breaks they would also take advantage of them. These practices are not regarded as lawless or as outside the code. You get the idea that the average business man, as well as men and women in professions and in all walks of life, regard most of the formal law with indifference, because there are so many laws and so many absurd laws that no busy human being could really know them.

Too Many Laws

It is startling to find how much contempt there is for law. The average business man out through the country tells you with smugness how many times he has broken traffic laws, or how he ignores some of the less obvious regulations of OPA, CPA, ODT and other Government agencies. There are so many laws or regulations flowing from the Federal Government, the States, cities, counties and other agencies that the average person apparently thinks most of them were made without much consideration, or that they were made chiefly for the benefit of certain groups or classes. You find this feeling most bitterly expressed about the Wagner labor laws. There are few business people who do not feel they have been treated unfairly and with discrimination by the President and the Congress in the majority of labor laws and their enforcement. They are almost unanimous in their demand that labor unions be compelled to accept all the corporate responsibilities of the business unit.

More Trainees Needed

In the sheet metal business, from New Orleans westward, the heads of business repeatedly asked this correspondent to suggest that the industry should be permitted to train more apprentices. They say the GI's wish to get into the trade and that the present restrictions are a hardship for both the employer and veteran. Among the makers of furnaces and the fabricators of sheet metal you find much exasperation about the lack of materials and the uselessness of the priority ratings issued by Government. You hear repeatedly that steel cannot be had no matter what allocations have been made or what priorities have been issued. They tell you the steel mills report there are so many orders

ahead that it will take months to reach even those new orders backed by priorities. You get the impression the average user of steel west of the Mississippi feels that steel largely is distributed among those who, by reason of volume of purchases or for other special reasons, are preferred customers.

West Has Motor Troubles, Too!

On the Coast furnace manufacturers experience great difficulty in obtaining materials, but the greatest distress apparently prevails over fractional horsepower motors, particularly the $\frac{1}{4}$ hp. motors. This reporter was often told that the most conspicuous manufacturers and suppliers of the fractional horsepower motor are not playing fair with their traditional customers. These customers in the past years placed their orders usually with two well known producers. During the period when there were virtually no motors, the furnace makers and other sheet metal people accepted the situation without fussing too much. But now they find that the firms which make the fractional horsepower motors allocate the lion's share of their products (65 per cent) to their own subsidiaries or to favored customers, and leave their old but smaller customers stranded with less than 20 per cent despite previous promises. Motors are allocated on prewar basis. The customers naturally can scarcely go to other producers of motors for what they need because the other producers in turn will give preferential treatment only to their old customers.

Out here where they use a large part of the production of the gas furnaces and manufacture most of the floor furnaces distributed to the nation—65 per cent—according to statements of the manufacturers in Southern California and in Portland, Ore., they tell you their inability to secure the materials and the equipment has markedly slowed them up and will make it difficult for them to supply the furnaces which are badly needed in Western homes, and that many of these homes will go cold this winter for lack of properly assembled equipment. Up in this Northwestern Pacific country, as well as back in the Rocky Mountain area, they are almost utterly dependent on floor furnaces, natural gas, synthetic gas or liquefied petroleum. Mercury goes down to zero in Portland and in Seattle and it is extremely damp. In Utah, Idaho, Montana, Wyoming and other States the thermometer drops below zero. There is much real worry among the members of your industry about the comfort of the customers of the dealers to whom they sell. Some furnaces are sold without motors, leaving supply to the dealer. Incidentally, it has been rather startling to this correspondent to hear the claim in Southern California and in the Pacific Northwest that by far the largest proportion of the production of floor furnaces of the nation originates in this area. They tell you their business has steadily increased and is still increasing, subject to the ability to supply what is ordered. They show you orders and waybills which reveal their furnaces go into all States, Territories and possessions of the United States and could go to many other parts of the world.

Foreign Trade Will Come

There is a keen interest in some types of these furnaces among certain people in particular places in South America. When the Government removes the export controls, now very tight on anything identified with the building program, it is expected a relatively large trade in floor furnaces will be launched. In

passing, it will interest you to learn that the great springboard for this trade is expected to be the Gulf Coast of Texas and Louisiana, and particularly the port of New Orleans. The developments in this region have been extraordinary. One is justified in the assumption that the greatest boom in its history is immediately ahead for Eastern and Southern Texas and for the area which funnels out to all the world from New Orleans. The people of this gay and hospitable city recently were endowed by the Federal Government with the power to establish an export zone at their port, which means goods may be transshipped without custom examination or taxation. It is a revelation to drive mile upon mile along the very latest type of docks and warehouses along the Mississippi waterfront of New Orleans. It is from these facilities that a large part of the products of the South, the Mississippi Valley and the Southwest are expected to go to the demanding markets of the Caribbean and South America, as well as to South Africa, Asia and the rest of the world.

Honesty in Government

It is the career of politicians, such as Huey Long, which apparently causes the average business man with whom this correspondent has recently visited to feel that the men who run Government are not fundamentally crooked or dishonest. You gather that many, who have heretofore looked upon politicians as patriots-for-what-there-is-in-it, now are puzzled to find that the Federal officials, by and large, are overwhelmingly honest. Apparently the average business man is beginning to see that the bureaucrat in Washington usually is utterly sincere in his conviction that the affairs of the people must be conducted in a paternalistic fashion because the people are not capable of planning and looking after their own affairs. The business man out here sees that the bureaucrat has created a business of Government which to him is just as important as is making furnaces to this industry. The business man realizes this profession of running Government has created a great group of men and women who have entrenched themselves in their jobs to protect their livelihood and to perpetuate their bureaucracy because they are utterly convinced this permanent bureaucracy of Government is absolutely necessary to maintain a strong and stable Government.

Do We Need 3,000,000?

There are now upwards of 3,000,000 persons in the Federal service protected by civil service and the number is constantly growing. Moreover, aside from the armed services, there are many persons in the employ of the Government who are not on civil service rolls. The average business man away from the immediate environs of the Capital strongly feels this great bureaucracy must be reduced and must be curbed. The business man thinks the idea of the bureaucracy is not American and that expense of maintaining it is one cause for our troubles. But the average business man this correspondent has met is confused, bewildered and disheartened about this business in Washington and does not know what to do. Neither does he know whom to trust. He regards most of the speeches he hears as propaganda and he distrusts his newspapers and periodicals for the same reason. He apparently has little faith in most radio commentators. At present, these business folk in the South, the Southwest and the West read Paul Mallon's column almost

(Continued on Page 130)

"Experience With Profit-Sharing"*

EVERY rise in the business cycle brings with it proposals designed to give wage earners a greater opportunity to share in the prosperity of the business. Profit sharing is not a new idea, since experience with such arrangements dates back over a hundred years. It has been estimated that perhaps as many as 1,000 to 1,200 plans have been tried throughout the modern industrial nations since 1842, but the movement has never gained widespread acceptance, and the failures have far exceeded the successes.

The present upsurge in labor unrest also witnesses a recurring interest in profit sharing. A number of new plans have been announced, and several bills have been introduced in Congress to study profit sharing as a measure for combating the waves of strikes.

Government Regulations

Profit-sharing plans which a company could adopt during the war years were quite different from those prevalent in the prewar era. Wartime plans were hedged about by many governmental regulations under wage and salary stabilization controls. To prevent them from being used to raise wages, distributions (other than in the event of death, disability, retirement and sickness) had to be deferred for the first ten years of the employee's participation and then spread over another ten years. If employment was terminated, a cash distribution could be made but only at the rate of 20% of the employee's total credits in any one year. Plans could not discriminate in favor of executives or highly paid employees. Governmental restrictions on profit sharing are gradually being lifted. On October 4, 1945, a ruling, PS No. 53, stated that employers could again distribute profits to employees in cash. At present employers are seeking a profit-sharing plan which will provide for lump-sum distributions to participants, a type which an employer could not introduce during the war without incurring heavy penalties.

The present article is devoted largely to experience with profit-sharing plans which provide cash distributions to rank-and-file employees.

Plans of this type have been initiated from a variety of motives both practical and altruistic. Appearing frequently among these motives is a belief that employees are entitled to share in the profits which they have helped to create. Profit sharing also has been conceived as a stabilizer of the wage scale by providing a flexible, supplementary payment which will fluctuate with business conditions and yet permit the company to control the wage cost so that it will bear a definite relation to company income instead of saddling the enterprise with a permanent charge of increased wage rates. Other companies have adopted profit sharing with the hope that the plan will cement the relations of employer and employee in a common bond of interest and create a better *esprit de corps*.

Perhaps the most important material advantage which the employer hopes to obtain from a profit-sharing plan is an improvement in the general level of efficiency and a reduction in waste. If workers can be

made to consider themselves partners in the business, they will be genuinely interested in increasing the profitability of the enterprise, in seeing that no one shirks, and in keeping scrap losses at a minimum. Inasmuch as profits are related to employee efficiency and morale it is hoped that the sharing of profits will spur the workers on to greater production and co-operative effort. Another motive in starting a profit-sharing plan is to reduce labor turnover.

Experience With Various Plans

In the 1937 study made by National Industrial Conference Board it was discovered that companies with active programs were well satisfied with the operation of their profit-sharing plans. These programs were considered particularly valuable in improving employee morale and in developing more cordial employer-employee relations. While a considerable number of employers believed that employee efficiency had been improved because of participation, profit sharing evidently had not been so great an incentive to increased production as had been hoped.

In some concerns, however, the plan had been signally successful in stimulating employees to greater effort. From the evidence presented, it appears that these plans were more effective in the smaller establishments in improving efficiency and in reducing waste, because in such plants individual initiative and skill are given greater scope than in the larger mass-production enterprises where the speed of the machine largely determines the output.

A fifth of the reporting companies believed that profit sharing had helped to reduce labor turnover. Other advantages, listed by only a few employers, were: increased interest of the employee in the company's welfare, the adjustment of compensation and the promotion of thrift.

Discontinued Plans

Of the 161 true profit-sharing plans surveyed in the 1937 study of THE CONFERENCE BOARD, ninety-six, or 60%, were found to have been abandoned.

What are the reasons for this high mortality rate which two agencies in two different countries have placed at approximately 60%? The success or failure of profit sharing does not seem to be closely allied to the particular specifications of the plan in many cases, but rather to psychological factors. An analysis of the cause of failures reveals certain danger signals which should not be ignored.

Table 1 compares British experience with profit sharing with that disclosed in the 1937 survey made by THE CONFERENCE BOARD. It will be noted that 26% of the British plans and 29% of the American plans were abandoned because of either employer or employee dissatisfaction with the results, while 52% of the British and 36% of the American schemes were discontinued because there were no profits to distribute or the company had gone out of business or had changed hands. In slightly more than a tenth of the plans, another form of benefit had been substituted for profit sharing.

*Reprinted from "The Conference Board Management Record."

Table 1: Comparison of Causes of Discontinuance of Profit-Sharing Plans in Great Britain and the United States

Cause of Discontinuance	British Survey		Conference Board Survey	
	No. of Companies	Per Cent	No. of Companies	Per Cent
Apathy of employees, or dissatisfaction of employers with results	87	22.0	16	16.7
Dissatisfaction of employees.....	16	4.1	12	12.5
Substitution of other benefits.....	43	10.9	13	13.5
Business conditions, diminished profits, losses.....	104	26.3	21	21.9
Changes in management.....	52	13.2	13	13.5
Company out of business.....	49	12.4	1	1.0
Government regulations .....	..	...	7	7.3
Reason for discontinuance not given	44	11.3	13	13.5
Total	395a	100.0	96	100.0

a In addition to 330 profit-sharing plans, statistics include 46 stock-purchase plans and 19 employee-savings plans.

The reasons for employer and employee dissatisfaction with profit sharing stem largely from the employees' lack of understanding of the principles involved and their inability to comprehend the influence of the business cycle upon profits. The profit-sharing plan apparently works fairly well as long as the company prospers but dissatisfaction arises when profits diminish or disappear.

Some Common Complaints

An unavoidable defect of profit sharing, especially from the standpoint of the worker, is that profits are influenced by so many extraneous factors over which he has no control, no matter how diligently he works. A change in the price structure, a turn in the business cycle or an unforeseen contingency, such as war, can affect the prosperity of the business far more than the acts of employees.

Lack of employee interest is another leading cause of discontinuance. This indifference arose from the fact that the profit distribution was so long delayed that the employee could not visualize the connection between his efforts and the bonus. It was common experience that workers were greatly enthused at the time of annual distribution of profits, but their interest soon waned, with the result that they were indifferent to the idea for most of the year. A number of companies sought a remedy for this situation by distributing profits more than once or twice a year even though it entailed considerably more bookkeeping.

Diminished profits were another cause of employee dissatisfaction. The disposition of the workers to consider their share as part of their regular earnings resulted in their using it to raise their standard of living. Consequently, when profits disappeared, the workers were as keenly disappointed as though their regular wage rate had been reduced.

Another reason for employees' dissatisfaction was their unwillingness to accept the principles of profit sharing even though they shared only in the gains and not in the losses. If the company has any money to distribute, they reason, why doesn't it put the extra compensation in the weekly pay envelope where they can count on it instead of making them wait six months or a year for money which may not be forthcoming.

Basic Considerations

On the basis of past experience, it would appear that certain conditions should be present if the profit-sharing plan is to succeed. One such condition is that the wage scale in the company contemplating profit

sharing should equal or exceed the going rate of the community for similar tasks. It should be impressed upon the worker that the supplemental bonus depends upon profits and is in no respect a part of wages.

Another factor is the profitableness of the enterprise. That there should be profits to distribute in sufficient amounts to make the bonus worth while would seem to be an obvious prerequisite to a successful plan, but it greatly limits the field of application of profit sharing. Either the profits should be large in comparison with the number of participants or the eligibility requirements restricted so that the profits for each participant represent an adequate sum for each. It will be noted from Table 1 that 22% of the plans were discontinued because of a history of unsatisfactory earnings.

Experience also indicates that a sound industrial relations program is also a prerequisite to a successful profit-sharing plan. The remedy for employee dissatisfaction and distrust is a program of education so that employees understand the principles involved and are not discontent when there are no profits to share. If the employee trusts management he will be more willing to accept management's word on the profitableness of the enterprise. In this connection, the question arises whether management is willing to open up its books to union representatives if the plant is organized. It has been a fairly common experience for employees to challenge certain aspects of the annual statement, and to intimate that the accounts were being juggled. If such a situation existed when unions were relatively weak, it is likely that this problem will be intensified in an organized plant, especially since many unions traditionally have been opposed to profit sharing.

Some of the most successful plans have provided for the accumulation of the employer's contributions in a fund which is not available to the employee until retirement or in the event of some emergency. The question arises as to how far employees will now be satisfied with a plan which defers distributions in the distant future, in view of union demands for immediate increases in wages to compensate for raises in the cost of living.

Of twenty-seven profit-sharing plans included in this analysis, twenty-five plans were adopted during the war period when a company could distribute profits in cash to its employees only under very restricted conditions. Some of these plans have been created largely for the purpose of providing retirement benefits for employees upon reaching age sixty-five. These deferred-distribution plans have been among the most successful in the past, but probably are not the type which will meet the immediate demands of the current labor picture.

Eligibility Requirements

Of the twenty-seven plans, twenty-one include all employees, two restrict eligibility to salaried employees, three to employees earning over \$3,000 a year, and one limits participation to managerial employees.

The companies are almost evenly divided as to the number of years of employment required before an employee is eligible to share in the profits:

Years of Service Required	No. of Companies
1 year	8
2 years	5
3 years	8
4 years	1
5 years	5

Determining Employees' Share

The most important decision to be made in setting up a profit-sharing plan is to determine how much of the company's profits shall be set aside as the employees' share. Shall this share be taken from profits *before* or *after* deduction of state and federal taxes, and what safeguards should be taken to make sure that stockholders receive an adequate return on their investment?

Nineteen of the twenty-seven plans take the employees' share from the profits before deduction of state and federal taxes, five compute the employees' share after deduction of taxes. The following tabulation indicates the manner in which the various companies determine their contributions to the employees' fund.

Employees' Share	No. of Companies
Per cent of net income before taxes	
5	7
6	2
10	5
20	1
25	1
Per cent of net income after taxes	
3 1/2	1
10	1
15	1
50	1
Per cent of employees' compensation	
10	1
15	1
Miscellaneous Provisions	5

Eleven out of the twenty-seven plans contain safeguards to prevent the employees from receiving too large a portion of the profits at the expense of the stockholders. Eight of the eleven provide that the stockholders' dividends shall be deducted from the net earnings *before* the employees' share is computed.

In two plans which are restricted to executives or to those earning over \$3,000 a year, the employees do not participate in the profits unless the company's

earnings reach a specified amount. In one company the employees' share is not to exceed 6% of the invested capital and surplus.

Allocation of Funds to Individuals

In apportioning the company's contribution to the individual participants, two general methods are followed. Under the first (16 companies), the fund is distributed to the credit of each individual in the same proportion as his compensation bears to the aggregate compensation of all participants.

Under the other method of distribution (nine companies), the individual's share is weighted not only by his compensation but also by his years of service; as per this example:

Years of Service	Weighted No. of Units for Years of Service
5 but less than 10	1
10 but less than 15	1 1/2
15 but less than 20	1 1/2
20 but less than 25	1 3/4
25 years and over	2

In allocating the employees' share of the profits to the individual participants, approximately two thirds of the plans apportion the funds on the employee's total compensation, including overtime and bonuses, and the remaining third on basic compensation.

Although profit sharing has been advanced as a remedy for the current labor unrest, experience indicates that it is not the panacea which its advocates believe. If employer-employee relations are not satisfactory, the adoption of a profit-sharing plan may give rise to more problems than the management had to deal with previously. Obviously, the subject should be studied carefully from all angles to determine whether conditions in the establishment are such as to insure the success of the plan.

Hobbs Act Comment

EMLOYERS are just as likely to be harmed by the Hobbs Act as are labor unions, according to an analysis of the amendment to the federal anti-racketeering act made by the Executive's Labor Service of the National Foremen's Institute.

The institute declares the Hobbs Act is a perfect example of our "pass-a-law" psychology when anything goes wrong anywhere. The big question raised by the Hobbs Act, the analysis asserts, is whether the courts will apply it as Attorney-General Clark assumes they will. If they do, the act will affect few companies, for it then outlaws an activity which only a handful of local unions practice. If courts ignore the Attorney-General's interpretation—that the law in no way deprives unions of any of their present rights—no one can foretell exactly how the new law will modify some of the sections of the Wagner, Norris-LaGuardia, Railway Labor, and Clayton Acts. For the very reason that no one will really know what the act adds to labor law until the Supreme Court has finally passed upon the exact meaning of the terms "extortion" and "robbery" as applied to normal union activities, it can be a great source of trouble. The unions are going to ignore it; attempts to force them to change any of their present practices will lead to disputes and

strikes; every indictment under the act will be fought all the way to the Supreme Court.

"Generally overlooked," says the analysis, "has been the fact that the law—if the Attorney General's forecast of the court's reaction proves incorrect—can take a sizeable part of control over labor relations out of the hands of management and place it under the control of local government officials. The Hobbs Act is really an amendment to the Federal Anti-Racketeering Act of 1934, which is enforced by federal district attorneys. Through the Hobbs amendment, these officials are ordered to scrutinize the activities of unions and whenever they find evidences of 'extortion' or 'robbery' to file charges against them. This clause gives publicity-seeking federal district attorneys the opportunity for interjecting themselves as they please into collective bargaining negotiations and for using this policing power as a means of extracting backdoor political quid pro quos either from management or the union. An employer may find his labor relations exposed to public gaze in the heated atmosphere of a court room, with the charges of the district attorney and the counter charges of the union bound to hurt him—the man in the middle—worst of all."

NEWS SUMMARY OF THE MONTH

Price Increase—Furnaces

(**A**MENDMENT No. 60 under Section 5.1 of Order 1 under Maximum Price Regulation 591—Specified Mechanical Building Equipment—effective August 28, 1946.)

"The maximum prices for warm air furnaces (24 inches and smaller) are raised by 10 per cent over the June 30, 1946, price ceiling.

A previous increase in price was granted manufacturers of warm air furnaces on April 19, 1946, in an action which recognized cost increases up to October, 1945. Today's action brings prices for warm air furnaces (24 inches and smaller), on an average 31.7 per cent over March, 1942, prices.

The advance in cost of materials such as pig iron, sheet steel, castings, motors and controls since last October as well as increases in wages approved by the Wage Stabilization Board were the main factors underlying the action.

The increase is the minimum required by law under OPA's industry earning standards. In order to compensate for their increases in acquisition cost, resellers are permitted to increase their maximum prices in existence on March 31, 1946, by the same percentage.

The prices go into effect August 28, 1946.

NOTE: Manufacturers are cautioned against applying the above 10 percent increase to the burner portion of a furnace-burner unit. Only the furnace takes the increase.

Higher Solder Prices

RESELLERS of lead products may raise their maximum prices enough to restore their March 31, 1946, percentage mark-ups on these products as required by the Price Control Extension Act of 1946, says OPA.

The products affected include any metallic lead product made from lead or lead alloys covered by the general March, 1942 price freeze regulation such as solder, sheet, pipe, fittings, plates, strip, etc.

Effective August 23, 1946, resellers of these products may compute their own maximum prices by adding their March 31, 1946, percentage mark-ups to their current acquisition costs.

(Amendment 15 to Supplementary Regulation 14G—Metallic Lead Products—effective August 23, 1946.)

Oil for Vaporizing Burners

THE vaporizing oil burner industry has taken steps to insure proper fuel oil for the 2,500,000 users of vaporizing, pot-type oil burners throughout the country, and for the estimated 1,000,000 new burners scheduled for production annually beginning in 1947 by approving revised fuel oil standards adopted by the technical committee of the Oil Division, Institute of Cooking and Heating Appliance Manufacturers, and

has forwarded them to oil refiners and technical groups.

The new standards call for a "stable distillate suitable for vaporizing, pot-type burners," produced according to specifications developed through a long period of testing and experimentation with straight-run distillates and oils produced in the catalytic cracking process. The industry reaffirmed its belief that straight-run fuel oils are most suitable for its equipment, but recognized that any fuel made by any process would be acceptable, providing it was treated or handled in a manner which would give the burning characteristics of the straight-run product.

Specifications for Fuel Oil

Suitable for Vaporizing, Pot-Type Oil Burners

API Gravity @ 60 degrees F.	36 Minimum
Minimum Flash, degrees F.	100 or legal
Viscosity, Kinematic at 77 degrees F. (25 degrees C.)	2.3 Minimum—2.9 Maximum
Corrosion	3 Hours at 122 degrees F.
Pour	0 degrees F., Maximum
Carbon Residue on 10 per cent Distillation Range	0.10 Maximum
10 per cent, degrees F.	420 Maximum
F.B.P., degrees F.	625 Maximum
BS&W	Trace
Type of Oil	Stable distillate suitable for vaporizing pot-type burners.
Waxes, Gums and other Precipitated Materials	Strainers, metering slots and orifices of standard controls must not become clogged upon prolonged use.

New GI Training Ceiling

PUBLIC Law No. 679 signed by the president on August 8, 1946, limits apprentice and on-the-job training to two years and puts a ceiling of \$175 (\$200 for those with dependents) that the trainee can receive from both his pay and GI living allowance. GIs in college still have up to four years and can work all they please, so long as their pay and living allowance does not go over the above ceilings. Practical effect may be to force apprentices and on-the-job trainees into the lower salaried fields where long apprenticeships are not necessary.

Increase Reseller's Profit

THE OPA has raised the price ceilings of several categories of building materials to conform with the provisions of the new Price Control Extension Act. All of the items involved previously were sold at only dollar-and-cent pass-throughs of increases granted at mill levels. Today's action, however, permits resellers to restore their March 31, 1946, percentage mark-ups.

The actions, effective August 23, 1946, will mean an increase of approximately one to three per cent

over existing resellers' ceilings. The items involved include asphalt and tarred roofing products, asbestos cement roofing shingles and siding shingles, metal lath.

(Amendment 21 to Supplementary Regulation 14F of General Maximum Price Regulation; Amendment 96 to Order A-1 under Maximum Price Regulation 188; Amendment 11 Revised Price Schedule 45; Amendment 24 Revised Maximum Price Regulation 206; Amendment 19 Maximum Price Regulation 224; Amendment 7 Maximum Price Regulation 466; and Amendment 60 to Order 1 under Maximum Price Regulation 592—all effective August 23, 1946.)

New Trends in Furnaces

IN A SPEECH delivered at the Pennsylvania Heating Conference at Pennsylvania State College, L. N. Hunter, Vice-President of the National Radiator Company, said: "It is unlikely that steel furnaces will replace cast iron altogether. Nevertheless, the current trend will probably continue because of the difficulty in getting labor to work in foundries and because improvements in methods of welding steel furnaces will eventually be reflected in the cost of the furnaces . . .

"There is considerable work being done to improve the operation of filters and some of the filters that are being developed will be somewhat different from those commonly used before the war. There is also some work being done on equipment to sterilize the air by means of lamps or chemicals . . .

"Another noticeable change in furnace design is a trend towards smaller, more compact furnaces for better insulated homes which, because of the insulation, require smaller furnaces, and for smaller homes where space is at a premium."

Mr. Hunter pointed out that some heaters are designed especially for certain fuels while others are designed for convertibility. "They are not only readily convertible from one fuel or type of firing to another, but they also have a good efficiency and perform satisfactorily with all fuels, including hand- or stoker-fired coal, and oil or gas. This convertible feature appeals to the public for a number of reasons. One reason is the possible shortage in the supply of the fuel the home owner might be using, in which case he can readily switch to another fuel at a minimum of cost. Also, the owner may want to change from one type of firing to another, because of a change in the economic status of the fuel, or in his own economic status.

"Another advantage of convertibility is that heaters can be installed in new homes without the firing equipment, and then the purchaser of the home can select any type of firing equipment he chooses."

Mr. Hunter sounded a warning that within the next few years there may be a considerable quantity of substandard equipment for sale. "Unfortunately, the sale of equipment of any kind which performs poorly, whether it be stokers, burners, boilers or furnaces, hurts not only those manufacturers who made it, but also all manufacturers making that particular product. . . No matter how satisfactorily the furnace and boiler industry has engineered its product, there remains an educational, promotional and selling job to insure that only equipment which is properly constructed and rated, and will provide the comfort expected of it, finds its way into the basements of American homes."

Oil Burner Fires Increasing

FIREs involving oil burners are increasing due to conditions brought about by the war, engineers of the National Board of Fire Underwriters report. Principal cause is lack of proper maintenance which has been due to lack of materials and the scarcity and high cost of trained mechanics.

Many burners installed during the war do not meet the minimum standards for safety and reliability. Others are just now wearing out after years of service, having been used longer than the reasonable life of such devices.

Chief among the faults causing oil burner fires is simple failure to check and clean the burner once a year. "Continued operation of the burner without cleaning and removal of carbon deposits inevitably results in clogging of the burner orifice," the engineers say.

When this happens, the flame goes out. Pressure builds up behind the obstruction. Frequently this pressure blows out the carbon, and oil again flows into the heated combustion chamber. So much oil is vaporized that combustion is incomplete. The result: clouds of sooty smoke puffing out of the furnace into the cellar and upstairs.

When the furnace explodes with enough violence to wreck the cellar and damage the floor above, that can also be blamed on failure to keep the burner clean. Under certain conditions, when pressure blows the obstruction out of a clogged up orifice, the vapor creates a mixture not proper for combustion. This delays the ignition so that when it does occur it comes violently, sometimes blowing off the furnace door and shooting flame into the cellar. Another source of current trouble is the oil burner that was removed for lack of oil during the war and later re-installed by the home owner without the aid or supervision of a competent oil burner service mechanic.

A study of fires in which oil burners are involved shows that two facts are of prime importance, the Board's engineers stated. First, the installation must be properly made by a well-trained man following the manufacturers' instructions, and second, the installation must be properly serviced once a year. A thorough check on the automatic control device and proper oiling and cleaning of the motor and other moving parts should be included in any check-up.

Building Volume

A NEW construction peak, as measured by the dollar volume of contracts awarded, was established in the 37 states east of the Rocky Mountains in the first half of this year, it was reported today by F. W. Dodge Corporation.

The total of contracts awarded in the eastern states was \$3,937,736,000, approximately a half billion greater than in the first half of 1928, the last previous peak year, a spokesman for the corporation said.

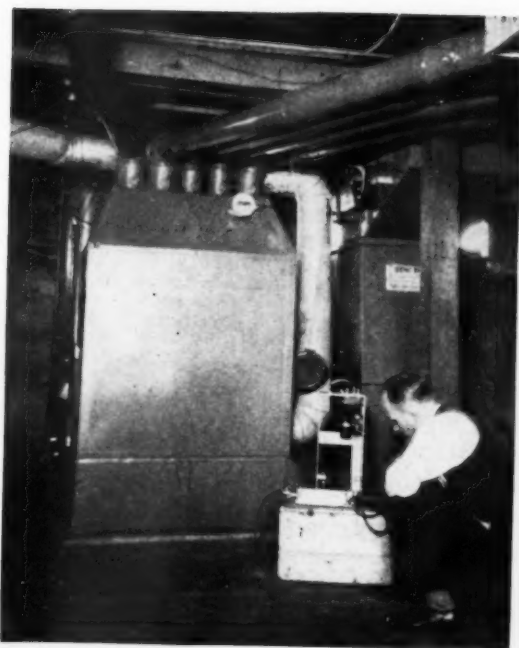
Residential volume contracts continued at a very high rate in June, though the total for the month was down from the phenomenal total of \$463,600,000 established in the month of May. June's residential volume was \$332,248,000.

Nonresidential construction contracts last month showed a recession from the May total of \$290,963,000

(Continued on Page 124)

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING

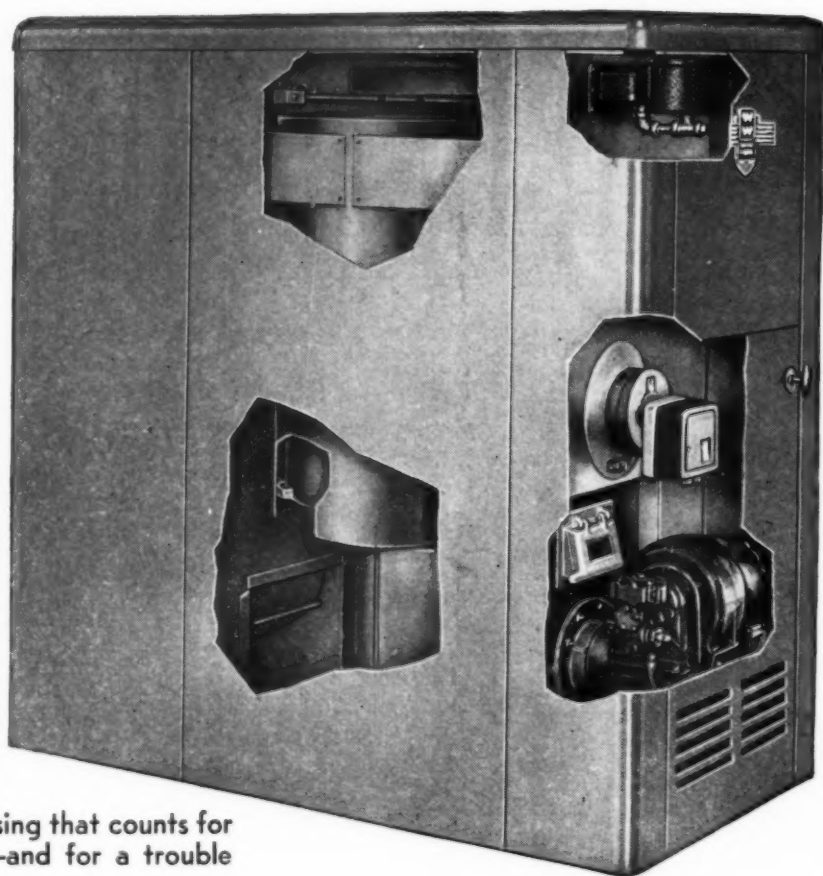


DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

Waterbury

Oil Fired Air Conditioner

It's
What's Under
The Casing
That Counts
!



Whether you are installing a simple gravity job or the most complete air conditioner, it's what's under the casing that counts for your customer's satisfaction—and for a trouble free sale for you.

The Waterbury Oil Fired Air Conditioner is a modern, compact, attractive unit, economical to buy—economical to operate. It is enclosed in an eye-appealing casing that is a compliment to the most modern basement—but what is equally important to you—because of the efficiency and quality of what is UNDER that casing, you are saved annoying service calls.

Furnaces for every size home and every type fuel—
from gravity models to complete air conditioners.

For
Service-Free
Economy

THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N. E., Minneapolis, Minn.

Correct Practice In Oil Heating

Part II [*Making out installation order—Sending it to the job —Analyzing the installation and pricing it—Keep- ing the installation log as a record of the job.*]

By J. J. Mirabile

Vice President of Engineering—Harold E. Sweeney Corp., Philadelphia

AN ESSENTIAL part of the orderly procedure in correct business practice consists of keeping close track of all work-in-progress. To this end the oil burner retailer should be able to trace all his installations and have accurate record of when each job is started and when it is completed.

So, at the time an installation order is made out it should be in quadruplicate with one copy to the bookkeeper (white), one to the foreman (green), one to the stockroom (yellow) and one to the job (blue). An envelope containing the installation order is delivered to the job along with the "kit" (see July issue). When the crew leader arrives he checks the

order against the material delivered and after completion of the work the crew leader marks off the quantities of various materials that were used in the installation. He leaves this copy of the order with the materials remaining, out of the kit, and it is then returned to the shop.

The stock room man checks the material returned against his order and then sends his copy and the crew's copy to the bookkeeping department. The job is then analyzed and the various items priced in order to arrive at the price for the entire job. An aid to the pricing procedure is a price list lettered on cardboard with each costed item matched to the item on

INSTALLATION FOREMAN'S
RECORD SHEET JOB # _____
HAROLD E. SWEENEY CO.
114 N. JUNIPER ST., PHILA. 7, PA.
RITzenhouse 5794

Type _____
Address _____

Fig. 1—The above reproduction shows the envelope which is sent out to the job containing the installation order. It accompanies the oil burner "kit"

Installation Log

CREW	NAME	ADDRESS	UNIT OR BURNER	Size	Cut & Weld	TANK DELIVERED		
						Welder Notified	Unit or Burner	Kit
NEWELL TURBET	Frederick Droge	5730 W. Juniper St.	Artisan C5	26"	No	Yes	5/27	5/27
	Alfred White	1421 E. Broad St., Norristown	Artisan N15	26"	Yes		5/27	5/27
	William Smith	426 W. Main St.	Artisan C5	22"	No		5/28	5/28
	Arthur Jones	1726 N. Arch St.	Artisan N2	26"	No		5/29	5/29

Fig. 2—On this and the facing page we show the Installation Log described in the text. Use of this log enables the dealer to keep a very complete check on the entire process of installing the equipment that he sells.

Surveyed By:				Burner Ser. No.				MATERIAL				LABOR			
Estimated By:				Boiler Ser. No.											
Installed By:				Controls:											
Completed															
AMOUNT				COST	AMOUNT				COST	AMOUNT				COST	
Out	In	Used	DESCRIPTION		Out	In	Used	DESCRIPTION		Out	In	Used	DESCRIPTION		
22.50			275 Gal. Tank	22.50	2			T-Cond. & Cover					1/4" IP x 1/2" Ell		
1.10			Tank Gauge	1.10	1			T. Cont. Switch & Cover					3/8" IP x 1/2" Tube Conn.		
.10			1 1/4" x 6" Nipp.	.10	1			3" Box and Cover					O. D. Tubing		
.12			1 1/4" Flanges	.12	8			Bx Connectors					Sq.-D Switch		
.09			1/2" x 3/8" Ell	.09	2			Bx Connectors 90°					Red Brick		
.05			1/2" x 3/8" Nip.	.05	1			Duplex Bx Connector					Fire Brick		
.07			3/8" x 3" Nip.	.07				14-2BX					Split Brick		
.68			3/8" Anti-Hum Valve	.68				14-3BX					lbs. Holdfast		
.20			2" Ells	.20				1/2" Greenfield					lbs. Cement		
.24			2 1/2" Ells	.24	2			Greenfield Con.					lbs. Sand		
.14			2" x 6" Nipp.	.14	2			Greenfield Con. 90°					lbs. Asbestos		
.10			2" x 4" Nipp.	.10				1/2" Conduit					lbs. Furnace Cement		
.07			2" x Shd. Nipp.	.07				1/2" Lock Nuts & Bush.					Bags Backfill		
.09			2" Plug	.09				1/2" Pipe Clamp					C. C. No. Gal.		
.12			2" x 1/4" Bushings	.12				Grd. Clamps					Extra Pieces		
.12			x Bushings					Solderless Conn.					" Draft Control		
.11			1 1/4" Ells	.11				No. 14 Red Wire					C.C. " x " " C.L.		
.12			1 1/4" Ells	.12				No. 14 Black Wire					Nozzle		
.08			1 1/4" x 6" Nip.	.08				No. 14 White Wire					Expenses		
.06			1 1/4" x 4" Nip.	.06				2-Wire Thermostat Wire					Location Vent		
.06			1 1/4" x Shd. Nip.	.06				3-Wire Thermostat Wire					Location Therm.		
12.50			2" Pipe	12.50				Thermostat Staples					Type System		
.75			1 1/2" Pipe	.75				10 Amp. Fuses					Electric Permit		
2.25			Filter	2.25				3 x 4 x 5 Box and Cutout					Remarks:		
.75			Fill Cap	.75				BX-Staples							
.35			Vent Cap	.35				JCP-Caplet							
.03			Reznor Hooks	.03				End Bushing							
			TOTAL												

Fig. 3—The installation order is pictured with the price list along side it as the author suggests. This is a very valuable short-cut in figuring the price of the installation.

Installation Log

Installation Promised	Started		Completed		Number of Man Hours	Pick Up Material Date		Billed	Inspected	Salesman or Dealer	Job Phone Number	REMARKS
	Date	Time	Date	Time		Notified	Pickup					
Soon	5/28	8:00	5/29	9:00	18	5/29	5/31	✓	6/3	Brener	WAL 2345	Get key at 5852 Juniper
Soon	5/29	9:00	5/31	10:30	19	5/31	6/1	✓	6/4	Storey	NOR 028	
Soon	5/31	10:00								Moore	None	Make delivery Wed.,
Soon										Williams	Dew 0771	May 29

the installation order. The bookkeeper lays the card-board on the order and has the cost items immediately lined up.

A valuable short cut in filing methods can be utilized in the handling of installation orders. Standard size letter folders can be cut in half, thus giving two folders approximately 6 inches by 9 inches, and the various orders having to do with installation and service can be printed to suit the size of the folders. In this fashion the ordinary filing cabinet can hold double the normal amount of filing matter. All pertinent information about an installation can be entered in this folder; burner number, furnace model and number, fan motor, and also any correspondence referring to the installation, or service on it. Thus the number of service calls made on any particular job, the type of call and the work done on the call are readily available in the file.

Installation Log

Some large shops make use of an "Installation Log" as shown in an accompanying illustration. This "log" gives a daily record of every job that is in progress and lists the crew, type of installation, delivery, starting time and like information. When a job has been

completed the crew leader phones in to the office and the completion time is entered on the "log" along with the number of installation hours. The shop men are simultaneously notified to pick up the material at the job. When the driver returns with the material he turns in his notice order. Other information on the "log" is: work needed on the tank, name of the dealer or salesman, the customer's phone number and any supplementary information that may be entered under the "remarks" column.

This installation procedure, as outlined, is based on the use of two- and three-man crews. However, the volume of business done, number of trucks operated and size of the dealer territory tend to determine the size of installation crew that is needed. As an example of the way in which this works out: If an installation kit is delivered by a truck driver and helper the furnace will probably be too much for them to handle. Therefore they can drop off the kit, to enable the crew to begin work, and when the installation has proceeded to a point at which the furnace and ducts, etc., will be needed then there will be sufficient help on hand to make unloading the furnace an easy job. Thus it is possible that several days can elapse between the delivery of the kit and the heating unit itself.



— ERRATA —

In the first article of this series by Mr. Mirabile, page 69, July AA, in a description of parts bins we inadvertently referred to the bins as being 14 feet deep rather than 14 inches. On page 132 of the same issue a pipe strap was called "strip" and an incorrect size of Parker-Kalon bolt was given (7 x 1/2 inch rather than 10 x 1/2 inch.)

PATTERNS FOR DIFFUSER ELBOW SQUARE TO RECTANGULAR USING PITTSBURGH LOCK

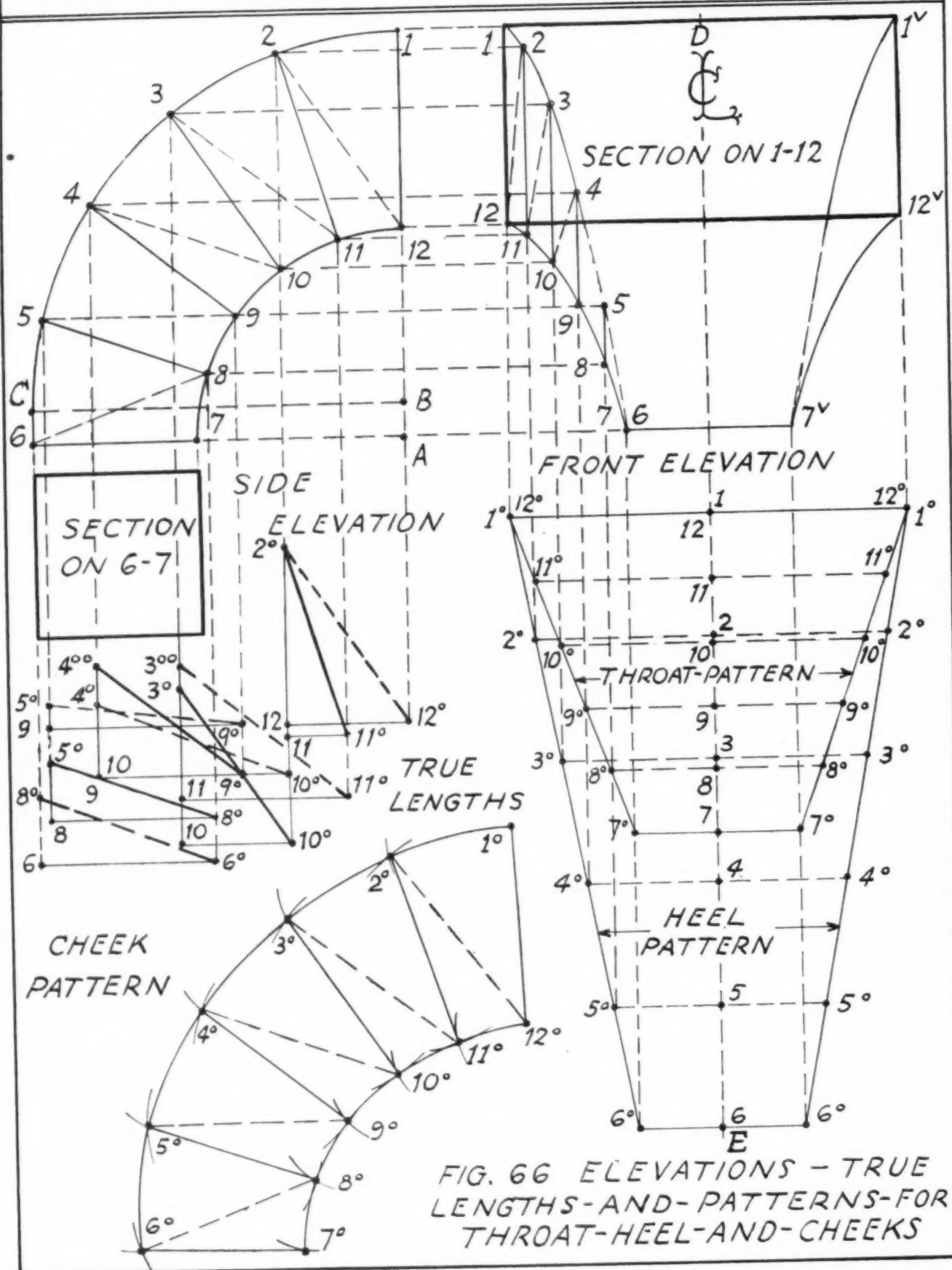


FIG. 66 ELEVATIONS - TRUE LENGTHS-AND-PATTERNS-FOR THROAT-HEEL-AND-CHEEKS

Pattern Development for

Air Conditioning Fittings*

By William Neubecker

Pattern Layout For Diffuser Elbow

IN Fig. 66 is shown the method of laying out the patterns for a diffuser elbow from a square riser to a rectangular outlet.

Methods Employed

The heel and throat are developed by means of parallel lines and the cheek by triangulation. In the illustration the full front elevation is shown as well as the full heel and throat patterns. In practice it is only necessary to draw the one half front elevation as well as the one half heel and throat patterns. The principles hereinafter set forth are applicable regardless of what the dimensions of the diffuser may be.

Drafting the Side Elevation

Using *A* as center with the desired throat radius, draw the quadrant 7-12. From *A* draw the horizontal line *A-6* and the perpendicular line *A-1*. Lay off the width of the square duct 6-7 and below the line 6-7 draw the section of the square duct as shown. From 12 lay off the narrow side of the rectangular outlet as shown from 12 to 1. As the distance 12-1 is greater than the width of the square duct 7-6, it becomes necessary to find the true center point for describing the heel from 1 to 6 so that a graceful curve is obtained to avoid choking at any part in the side elevation.

This center point is found as follows: Take the least distance from *A* to 6 and set it off on the perpendicular line 1-*A* from 1 to *B*. Using *B* as center with *B-1* as radius, draw the quadrant 1-*C* to meet the horizontal line *B-C* at *C*. From *C* draw a straight line from *C* to 6 to complete the side elevation drawn to given dimensions.

Heel and Throat Patterns

Before the front elevation can be drawn, the patterns for the heel and throat must be developed as follows: Space the heel and throat curves shown in side elevation in equal divisions as shown by the small figures 1 to 6 on the heel and 7 to 12 in the throat. Draw the section of the rectangular outlet on the line 1-12 as shown by 1-1'-12'-12 in the front elevation and through the center of this rectangle draw the center line *D-E*. Now, starting from any point as 1 on this center line, lay off the girth of the heel in side

elevation, as shown from 1 to 6 on the line *D-E*. Through points 1 and 6 draw horizontal lines as shown. Take one half of the rectangular section 1-1' and set it off on either side of the point 1 in the heel pattern as shown by 1-1°.

In a similar manner take one half of the side 6-7 of the square duct, shown in side elevation, and place it on either side of point 6 in the heel pattern as shown by 6-6°. Draw lines from 1° to 6° on both sides and through the points 2 to 5 inclusive draw lines to intersect the lines 1°-6° at 2°-3°-4° and 5°. The throat pattern is obtained by taking the girth of the throat 12 to 7 in side elevation and setting it off from point 12 on the center line *D-E*, as shown by similar numbers 12 to 7 and make 7-7° equal to 6-6° in the heel pattern. Draw lines from 7° to 12° on both sides. Through the points 8 to 11 inclusive draw horizontal lines to intersect the lines 7° to 12° at 8°-9°-10° and 11°. The spaces 1° to 6° in the heel pattern and 7° to 12° in the throat pattern, will be used in laying out the pattern shape for the cheek.

Drafting Front Elevation

To obtain the lines of intersections between the cheek, heel and throat, in front elevation proceed as follows: From the various points 1° to 6° and 7° to 12° in the heel and throat patterns respectively, erect perpendicular lines to meet horizontal lines drawn from similar numbers in the side elevation and in this way obtain the intersection 1 to 6 in front elevation between cheek and heel and from 7 to 12 between cheek and throat. Trace the curve miter lines through points so obtained as shown.

Finding the True Lengths

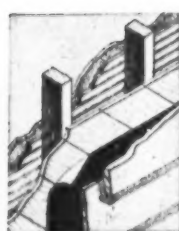
The next step is to find the true lengths required to triangulate the cheek. Draw solid lines in the side elevation from 2 to 11, 3 to 10, 4 to 9, and 5 to 8; also dotted lines from 2 to 12, 3 to 11, 4 to 10, 5 to 9 and 6 to 8.

In a similar manner connect similar numbers in front elevation by solid and dotted lines as shown. These solid and dotted lines in the front elevation then represent the bases of triangles to be constructed whose altitudes or heights will be equal to the horizontal distances between similar numbers shown in

(Continued on Page 144)

*All Rights Reserved.

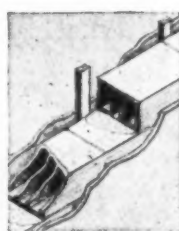
REDUCTIONS IN FUEL BILL WITH USE FOR TYPICAL ONE-STORY HOUSE



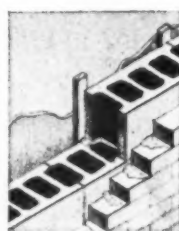
FRAME
Wood or
Shingle Siding



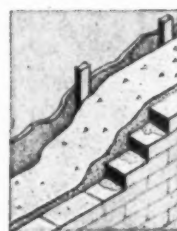
VENEER
Brick or Stucco
on Frame



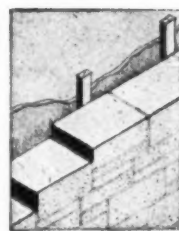
MASONRY
Stucco on Tile or
Concrete Block



MASONRY
Brick and
Concrete Block



MASONRY
Brick and
Concrete



MASONRY
Stone 8"

Relative Fuel Bill of Home (without storm sash and insulation)	100	104	107	111	118	126
DESCRIPTION OF WEATHER-PROOFING	NUMBER OF FUEL UNITS SAVED BY WEATHER-PROOFING					
WINDOWS AND DOORS						
1. Weather stripping on all windows and doors	3	3	3	3	3	3
2. Storm sash and storm doors on all openings	12	12	12	12	12	12
3. Weather stripping plus storm sash and doors	12	12	12	12	12	12
CEILING INSULATION						
1. Insul. lath (1/2"). Attic not vented	9	9	9	9	9	9
2. Insul. lath (1"). Attic not vented	14	14	14	14	14	14
3. 1" insul. board over joist. Attic vented	12	12	12	12	12	12
4. 1" insul. board and 1/2" insul. lath vented	15	15	15	15	15	15
5. 2" blanket between joist. Attic vented	18	18	18	18	18	18
6. 4" blanket between joist. Attic vented	22	22	22	22	22	22
WALL INSULATION						
1. Insul. board lath (1/2") with plaster	5	7	9	11	16	21
2. Insul. lath (1/2") with insul. sheathing 25/32"	8	10	..	..	..	..
3. 1" blanket between stud or furring	9	12	15	18	25	31
4. 2" blanket between stud or furring	12	15	18	22	29	36
5. 3 5/8" blanket between stud or furring	13	16	20	24	31	39

THE ABOVE tables are excerpts from a circular distributed by the Small Homes Council of the University of Illinois entitled "Insulation in the Home." Many people are in general agreement with the idea that insulation of their home may save them money on their fuel bill, but they have only a vague notion of just what the saving will be in dollars and cents. By making use of these tables they can figure the exact effect of insulation of the house as it will be reflected in lowered fuel bills.

Storm sash and insulation are usually applied only to rooms above the ground level. Hence, weather-proofing the house will reduce the heat loss of these rooms, but will not affect the heat loss from the basement. However, the fuel burned will heat the entire house, including the basement. The savings of fuel units shown in these tables are based on heating the

entire house and correspond more closely to test results than do tables based on calculations in which the basement heat loss is neglected.

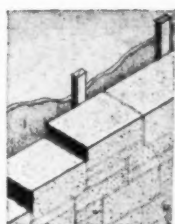
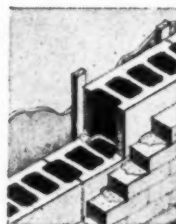
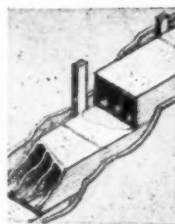
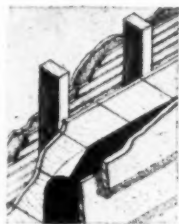
House Types Tested

The houses used in the derivation of these tables were a one-story structure, 36 ft. by 28 ft., and a two-story structure, 28 ft. by 24 ft., each with a full basement. The ceiling height of all rooms was taken to be 8 ft. and the area of windows and doors was assumed to be 15 per cent of the total exterior wall area.

These dimensions are average for typical one- and two-story houses. Reasonable changes from these dimensions, in the ratio of length to width or in the percentage of glass area, will not seriously affect the tabulated results. If a house is without a basement

OF STORM SASH AND INSULATION

FOR TYPICAL TWO-STORY HOUSE



FRAME
Wood or
Shingle Siding

VENEER
Brick or Stucco
on Frame

MASONRY
Stucco on Tile or
Concrete Block

MASONRY
Brick and
Concrete Block

MASONRY
Brick and
Concrete

MASONRY
Stone 8"

Relative Fuel Bill of Home
(without storm sash and insulation)

100 105 111 116 127 138

DESCRIPTION OF WEATHER-PROOFING

NUMBER OF FUEL UNITS SAVED BY WEATHER-PROOFING

WINDOWS AND DOORS

1. Weather stripping on all windows and doors.....	5	5	5	5	5	5
2. Storm sash and storm doors on all openings.....	18	18	18	18	18	18
3. Weather stripping plus storm sash and doors.....	18	18	18	18	18	18

CEILING INSULATION

1. Insul. lath (1/2"). Attic not vented.....	6	6	6	6	6	6
2. Insul. lath (1"). Attic not vented.....	8	8	8	8	8	8
3. 1" insul. board over joist. Attic vented.....	7	7	7	7	7	7
4. 1" insul. board and 1/2" insul. lath vented.....	9	9	9	9	9	9
5. 2" blanket between joist. Attic vented.....	11	11	11	11	11	11
6. 4" blanket between joist. Attic vented.....	13	13	13	13	13	13

WALL INSULATION

1. Insul. board lath (1/2") with plaster.....	7	10	13	16	23	30
2. Insul. lath (1/2") with insul. sheathing 25/32".....	12	16	..	..	..	..
3. 1" blanket between stud or furring.....	13	18	22	26	35	45
4. 2" blanket between stud or furring.....	18	23	28	32	43	53
5. 3 5/8" blanket between stud or furring.....	19	24	30	35	45	56

but uses a first-floor utility room, this table may still be used.

The figures across the top of the table give a comparison of the fuel bill for different constructions—all without insulation. For example, where 100 fuel units are used in a two-story house (column 1) the same house with brick-and-concrete-block exterior walls would require 116 fuel units or approximately a 16 per cent larger fuel bill. The figures in any one vertical column give the reductions in the fuel bill to be expected by the addition of insulation.

Use of the Tables

A one-story house has a brick veneer exterior wall and neither insulation nor storm sash. What will be the reduction in fuel cost if storm sash and storm doors are added?

Locate the proper column for a one-story brick veneer construction and the relative fuel bill will be

104 units per year. Read down the column to the figure opposite "storm sash and storm doors." This figure, 12, represents the saving from 104 units, or about 11 per cent of the fuel bill.

A two-story house is to be built with 8-in. stone exterior walls. The fuel bill has been estimated at \$120 per year. What insulation must be added to reduce this to \$60 per year?

The basic fuel bill for such a house (two-story house table, column 6) is 138 units. If this is reduced by one-half, or 69 units, the desired savings will be reached. Add windows and doors, storm sash: 18 units; ceiling insulation, 4-in. blanket: 13 units; wall insulation, 1-in. blanket: 45 units. Total: 18 + 13 + 45 = 76 units, which is satisfactory.

Similarly, other combinations of savings may be added, but in each combination you must limit your choice to only one window-and-door weatherproofing, one ceiling insulation, and one wall insulation.

Save Fuel By Survey!

By E. F. Fuller
Fuller Engineering Company
La Crescenta, Calif.

THE subject of Fuel Efficiency is one which requires specialized engineering knowledge of more than one type. This is the case because the completion of a fuel efficiency "survey" calls for a good basic understanding of both heating engineering and pyrometric engineering. While the functions of these two engineers differ, there is a meeting point in the process of making this type of survey.

Weather Statistics

By making use of data compiled by the Weather Bureau a heating engineer should be able to calculate, very accurately, the maximum heat demand of almost any building erected in any area covered by these statistics. In some territories the Bureau records degree days, to heat, as well as the extreme and average temperature, thus the calculations of heat demand are more difficult in those localities where merely the temperature is a matter of record. Since the seasonal fuel requirements are an essential part of a fuel efficiency survey the importance of the weather data is obvious. To determine the efficiency in fuel consumption it is necessary to know the fuel required as well as the fuel consumed.

Importance of Heat Requirements

First step in the process of inspecting a heating installation should be the study of the heating specifications for the particular furnace or boiler. The characteristics of the heating installation *must* be understood by the examiner before any attempt at alteration or adjustment is made. If the firm which made the installation does not have the heating specifications it is possible that the owner of the building may procure them from the architect who designed it. Once the plans have been obtained it should be ascertained whether any changes have been made in the building since its erection (added rooms, insulation, storm sash, weather stripping) which might alter the heat loss. Should it happen that the heating specifications are not in existence, they must be figured before the job can be properly analyzed.

Some Common Heat Faults

One of the most important things about adjusting an oil burner is to make sure that the greatest possible amount of the heat generated is utilized. Losing heat up the chimney is just as serious a fault as having the oil burner operating on an incorrect air-oil combustion ratio. And, taking for granted the fact that the manufacturer should know the requirements for his burner better than anyone else, it is usually best to adjust the burner draft to his standards, unless evidence is at hand that the particular burner installation necessitates different performance than specified. An

important thing to be careful of in draft adjustment is the possibility of causing "puff-backs." Too much draft is obviously wasteful, but if there is not sufficient draft the unconsumed gases, present in the fire box during the 'off' period, may remain in the chamber. Then when the burner recycles, a "puff-back" occurs.

In many cases reports are turned in of insufficient heat on cold days and it is discovered that the waste of heat is so serious that the smoke pipe becomes red-hot. Obviously, then, a very high percentage of the heat generated by the burner is going up the chimney flue. This is the very type of thing that should be prevented by a fuel efficiency survey. The aim of such a survey is to determine the heat requirements of a building, in conformation with weather statistics, analyze the operation of the heating plant to assure its correct functioning, and make any possible recommendations that will lead to a saving in fuel without any sacrifice, and possibly with an increase, in indoor comfort during the heating season.

Actual Surveys

As an illustration of the calculations involved in a fuel efficiency survey the following data is from actual tests and surveys made in the vicinity of Milwaukee, Zone 3, as specified in the Industrial Commission of Wisconsin, Heating, Ventilating and Air Conditioning Code, issued in Madison.

Case No. 1

150,000 Btu Warm Air Furnace (Gravity Type)
80,000 Btu. Maximum Heat Delivery per hour
80,000 Btu. Maximum Heat Demand of the Bldg.
1.65 g/hr. Fuel Jet (Nozzle) Operation $\frac{2}{3}$ time at maximum, Conversion Oil Burner
29 inch diameter fire pot
9 inch diameter chimney flue
84° F. Temperature Difference to heat building to 70° F. in coldest weather
7,189 Degree Days to heat per normal season
2,320 Gallons No. 3 Fuel Oil consumed per season
52% Overall Heating Efficiency.

Process No. 1

150,000 Btu. per hour Maximum Fuel Input
8.4 per cent CO₂ = 9 per cent Combustion Loss = 10,000 Btu.
600° F. Flue Gas Temperature
600 ft. per minute Stack Velocity
15,000 Cubic Feet Dry Gas Volume
equals Dry Gas Loss of 60,000 Btu.
Total Combustion and Dry Gas Loss = . 70,000 Btu.
Useful heat delivered to building = ... 80,000 Btu.

Maximum Fuel Input per hour = 150,000 Btu.

(Continued on Page 138)

1. Size of building: Width 34'-0" Length 59'-0" Height or No. of Floors 2 Floors
2. Material used in building: Stone, Brick, Wood, etc. Hollow Tile and Plaster
3. Is building caulked & weather stripped? No. Storm windows? No.
4. Is building insulated? No.
5. Kind and amount of fuel used per year 6,830 gals., No. 3 Fuel Oil
6. Type of fuel burning equipment: Handfired, Stoker, Oil, Gas, etc. Oil Burner
7. Is fuel burning equipment or boiler overloaded? No.
8. Type of Boiler Mfgs. No. Size Connected load; Sq. Ft. E.D.R. (If known)

<u>1,400,000 Btu./hr., Forced Circulation Warm Air Furnace</u>	M.H.D. of S.H. <u>216,000 Btu.</u>
<u>70 per cent overall efficiency</u>	Ventilation <u>126,000 Btu.</u>
	Total <u>342,000 Btu.</u>
9. Is boiler insured? Furnace is insured
10. Type of Htg: Warm Air, Hot Water, Steam, Space Heaters, Unit Heaters, etc. Warm Air
11. Steam gage pressure or boiler temperature _____
12. Condition of grate or burner Good
13. Is domestic hot water heated by separate hot water heater or by heating boiler? Separate
14. Are there any steam leaks in boiler piping? _____
15. When were radiator traps last inspected? _____
16. Are boiler flues or flue gas passages kept clean? _____
17. Cleaned how often? Furnace cleaned once a year
18. How much & how often is water added to boiler? _____
19. How often is boiler cleaned? _____ What method is used? _____
20. Kind of system: Gravity, Vacuum, One or Two-pipe, etc. _____
21. On vacuum system can vacuum be maintained? _____
22. On two-pipe vapor system does return blow steam? _____
23. When was boiler return last inspected? _____
24. List operating troubles, if any: _____
25. What temperature is maintained in the building? 70 F.
26. Is building temperature reduced at night or when not occupied? Yes.
27. Are windows left open to correct overheating? No.
28. Is Auto. Temp. control employed? Yes. Room temp. thermostat Yes.
Zone temp. control No.
29. Is fuel burning equipment controlled by pressurestat or thermostat? _____
30. What water level is maintained: Minimum inches _____
Maximum inches _____
31. Is breeching damper in good condition and is it used properly? Yes.
32. Is damper tight in closed position? _____
33. Is plant troubled with smoke or fly ash? No.
34. State size of outside air inlet to boiler room 3'x 4'-0" Is it kept open? No.
35. List combustion controls & instruments: Type or make Minneapolis-Honeywell Stack Switch
and Thermostat
36. Are controls adequate & operating effectively? Yes.
37. Is refractory material in satisfactory condition? Yes.
38. If brick set boilers, are settings tight? _____
39. Are boilers & boiler room piping insulated? _____ If not, why not? _____
40. Is basement steam supply piping insulated? _____
41. Additional information & suggestions: Insulation of ceiling of second story would
save approximately 840 gallons of fuel oil per heating season.



The "How, What and Why" of the New Winter Air Conditioning Manual

BY
S. KONZO*

HOW TO USE IT
WHAT RESEARCH BACKS IT UP
WHY EVERYBODY SHOULD ADOPT IT

How to Adjust and Balance a Warm-Air Winter Air Conditioning System

WE NOW come to the final and most important part of every heating plant installation—adjusting and balancing. In the words of the automobile trade "the job has to be tuned." These instructions summarize the steps to be taken to insure that every warm air, winter air conditioning system is properly adjusted and balanced for attainment of maximum comfort conditions in the home.

A good furnace and a good duct system are essential, of course. However, if the system is not adjusted and balanced, the home owner will not get the full degree of comfort which the equipment is capable of giving.

Adjustment of Burner Heat Input

Hand-Fired Coal Furnace—On hand-fired coal furnaces with electric damper motor control, adjust the draft chain to open the ashpit draft damper not more than about $\frac{1}{2}$ inch. Be sure that draft dampers, firing door and ashpit door fit tightly when closed, so that the fire can be checked to a very low rate. This will largely prevent overheating with continuous blower operation. The use of balanced check dampers (barometric dampers) may be advisable to limit the maximum draft under maximum firing conditions.

Explanatory Note: We cannot emphasize too strongly the necessity for proper combustion control of hand-fired coal equipment. In the commercial standard, CS109-44, for testing and rating of hand-fired furnaces, the specifications state that the firing door and ashpit doors "shall be fitted so that a piece of paper of the width and thickness of United States paper currency, placed at any point around the perimeter of the opening, cannot be withdrawn when the door is closed." It is obvious that the firing door should be of warp-proof construction that is protected from direct radiation from the glowing coals by means of a liner.

In the tests conducted in the Research Residence it has been observed that a soft coal fuel bed is almost explosively responsive to increases in draft. We have observed a rise in flue gas temperature from about 200 deg. F. to over 1200 deg. F. during a period of about

3 minutes when the ashpit damper was wide open and no check was placed on the smokepipe draft. A plant that is capable of such tremendous heat releases is a danger to the household, and a distinct fire hazard. The ordinary room thermostat and bonnet limit thermostat are not responsive enough to prevent this overfiring.

In the studies made with the Illinois Smokeless Furnace it was observed that the use of the balanced check damper (or barometric damper) in the smokepipe, completely eliminated these temperature surges. The damper can be set to limit the maximum draft to say 0.06 in. to 0.08 in. of water. Fig. 1 shows an arrangement tested in the Residence which gave excellent results. With this arrangement it was found that even with the ashpit damper wide open that the flue gas temperature did not exceed a predetermined ceiling of 800 deg. F. Hence, the device served not only to maintain a more uniform combustion rate, but also served as a most effective safety device. It should be understood that whenever the combustion rate is limited to some definite value, for example, 800 deg. F. that the heat release from the fuel is also limited, with the result that temperature pickup in the house is slowed down. This should be explained to the homeowner, who, so often, desires a quick pickup at the sacrifice of safety and the life of the furnace. The use of a balanced check damper may be unsatisfactory with a poor chimney that lacks sufficient draft even under the most favorable weather conditions.

Automatic-fired Furnaces (stoker, gas, or oil). Adjust the fuel-burning equipment for proper fuel and air input to the furnace.

Fuel input rate should be as small as possible for most economical operation, and yet sufficiently great to heat the house in coldest weather.

Explanatory Note: In a forced air system heat is never stored; it must be generated at the same rate as it is lost from the house. Essentially, therefore, good temperature control in the house depends primarily on good combustion control. By the Manual method of selection, a gas-fired furnace having a bonnet efficiency of 80 per cent and an assumed duct transmission efficiency of 85 per cent, has an overall system efficiency of $0.8 \times 0.85 = 0.68$, or 68 per cent. That is, if 100 Btu are fired into the furnace, 68 Btu

*Special Research Professor, Engineering Experiment Station, University of Illinois.

are assumed to appear at the register. Or to put it another way, about 1.5 Btu is fired for every Btu lost from the rooms in design weather. This value of 1.5 is considerably smaller than that obtained from hand-fired and most oil-fired plants. Nevertheless, it should prove to be sufficient in most cases.

Some installers have the idea that a gas furnace should have ample reserve and that overfiring is desirable. Overfiring will result in quicker pickup in house temperature, but results in greater overruns and non-uniform house temperatures. It is the writer's opinion that with gas-fired furnaces it is better practice to maintain the lowest fuel input that will satisfy the design load conditions, and to do away with the idea of night setback of the room thermostat.

Adjustment of Blower Switch

Open all dampers in duct system on both warm air and return air branches. Mark the branches to show the room being served.

Explanatory Note: One successful installer has informed us that he has found it more convenient to partially close all dampers (about one-third of the way) and then to open only those to rooms that require more heat. Either method is workable. The main item is to be sure that the job is balanced.

When all the warm air registers are at the high sidewall location, the *fan switch* should be adjusted to start the fan when the bonnet air temperature has reached about 110 deg. F., and to shut off at about 25 deg. F. lower than the starting temperature.

When any warm air registers are located at the low wall, baseboard, or floor locations, slightly higher air temperatures will usually be required. The *fan switch* should in this case be adjusted to start the fan when the bonnet air temperature has reached about 130 deg. F., or slightly less, and to shut off at about 25 degrees F. below the starting temperature.

The LIMIT SWITCH should be set, independently of the fan switch, so that the bonnet air temperature cannot exceed about 175 deg. F. Often the limit switch cannot be adjusted independently of the fan switch. In this case, set the fan switch at the lowest bonnet temperature which will heat the house in the most severe weather.

Insert a thermometer (200 degree range) in one of the main trunk ducts close to the plenum chamber.

Adjustment of Blower Speed

Turn on the burner by temporarily setting the indicator on the room thermostat to its highest position. Allow the burner to operate continuously for at least an hour until the air temperature in the trunk duct has reached its maximum value. (Let us assume this is 150 deg. F. when the air going to the blower is about 65 to 70 deg.)

Reduce the speed of the blower, if possible, by changing the adjustable pulley on the motor. With continuous uniform heat input, the air temperature in the warm air duct will rise as the blower speed is reduced. Observe the thermometer in the duct after the blower has run long enough for the air temperature to level out. A temperature of between 160 to 170 deg. F. is desired in the usual residential installation. Slightly higher air temperatures may be used in larger installations having long warm air supply ducts.

If, when both the burner and the blower have been operating continuously, the air temperature in the trunk duct is about 165 deg., you will have the required air volume.

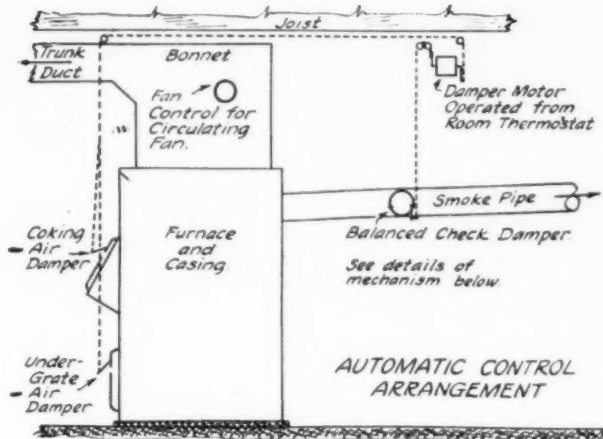


Fig. 1—The above illustration gives a clear picture of the various parts of a winter air conditioning system that must be properly balanced to produce the right kind of heating.

Explanatory Note: Somehow it seems difficult for some installers to understand that this 165 deg. bonnet temperature is used only as an indicator of the required air volume. Seldom, if ever, under normal operating conditions will the bonnet temperature attain this value. Over 90 per cent of the heating season the bonnet temperatures should range from about 110 to 140 deg. F.

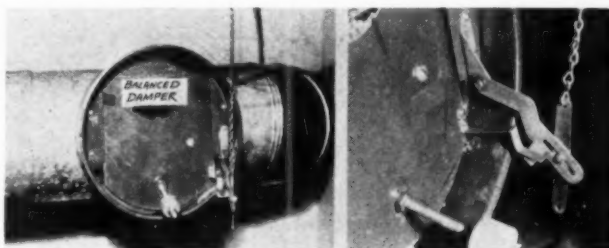
Adjustment of Dampers in Duct System

Place portable room thermometers at about table height in main rooms of house, preferably near middle of the room.

Explanatory Note: One installer has forwarded a practical tip which will speed up the work. He recommends a sling psychrometer (or a thermometer on a cord) for use in making room temperature observations. The observer can revolve the thermometer at the end of a 12 in. cord and obtain a reading at the end of about one minute, and then repeat the process in each room.

Set indicator on room thermostat at about 70 deg. F. Set the room thermostat for the minimum practical differential. See instructions of the furnace manufacturer. In the case of gas-fired equipment, for example, this may be as small as 1/2 deg. For oil-burning devices, the differential should be set so that the burner operates at least 3 min. for each cycle of operation. Let the heat source operate frequently and for short periods. Heat anticipating, or heat accelerating, types of room thermostats assist in producing frequent cycling of the heat source.

Fig. 2—Below we picture the balanced or barometric damper that is referred to, in the text, by the author.



Explanatory Note: Room thermostats are packaged at the control manufacturer's factory. The setting of the differential adjustment is usually an average for any type of heating system, that may be warm air, steam, or hot water. Our experience in the Research Residence has been that factory settings are usually too large for forced warm-air plants, which are extremely responsive to changes in heat demand. Obviously, the differential should not be set so close that the thermostatic elements are liable to get stuck or are affected by the slightest vibration near the thermostat. The more frequently the burner can be made to operate, the better the plant will perform. The only real limitation is in the burner itself. Most oil burners and stokers require a minimum period of operation of about 3 minutes, since shorter operating periods may result in smoke and incomplete combustion. With a fixed input device, such as a gas burner, oil burner, or stoker the only combustion control that we have available is that which regulates its on-period operation.

One definite precaution is necessary. If you do not understand the working of a room thermostat do not tinker with it. It is better to have some overruns in temperature than to have a damaged thermostat. Set the return-air dampers so that the air will be returned evenly from all parts of the house. If the air velocity is noticeably high in front of any warm-air register, adjust the deflecting vanes in the register. Allow the plant to operate normally for several hours, and observe room temperatures in main rooms of the house. If any room is warmer than desirable, reduce the air flow to that room by adjusting the damper in the warm air branch.

Explanatory Note: You will observe that no attempt is made to balance the plant by means of anemometers or air velocity indicators at the register face. In large structures and in commercial work it is probable that such velocity indicators will be most useful in adjusting air flow. In residential work, however, where heat regains from heat ducts, chimneys, warm floors, etc., may offset a large part of the heat loss from any given room, we have found that the only reliable indication of balanced flow is a measure of the room temperature itself. We are seeking 70, 72, or 75 deg. F. in the room, as the case may be, and it makes little difference in the long run whether we have 100 cfm at the register or 150 cfm.

The reaction of most installers will be that the procedure given will take too much time. It will; there is no question about it. And yet it should be done under normal operating conditions, if at all possible. There may be ways of balancing a job in the summer time, but I have yet to see a method which is fool-proof, and which will not have to be done over again in late fall.

Desired Operation

When the heating system is properly adjusted, the plant should operate so that:

- a. The blower operates practically continuously in average winter weather, at relatively low and quiet speed.
- b. The burner or damper motor should operate frequently and for short periods.
- c. There should be no noticeable air motion in portions of the room that are normally occupied.

Housing Progress

A TOTAL of 225,000 houses and apartments were completed and nearly half a million started under the Veterans Emergency Housing Program in the first six months of the year, reports NHA.

Of the 225,000 units completed this year, 153,000 are new permanent houses and apartments, and 72,000 are temporary re-use housing, conversions, and trailers. Of the new permanent units, 113,000 are houses and apartments started in 1945 of which progress had virtually stopped because of materials shortages by the end of the year. Nearly all the 1945 residential units have been completed.

The remaining 40,000 new permanent completions were started in 1946, largely in the first two or three months of the year. This represents only 30 per cent of all starts prior to April 1.

The abnormal demand for building materials has lengthened the average time of building a home to between six and seven months in contrast to the three to four months required in prewar years.

The total number of housing units started in the first six months of the year was placed at 496,000, including 92,500 for June. This total includes 331,000 new permanent dwellings. The June starts represent a 12 per cent decline from the May figures.

The experience of the first six months indicates no

reason for changing the original 1946 target of 1,200,000 starts even though that figure represents the highest number of starts for any one year in history, NHA said. However, certain modifications are necessary in various parts.

In view of the number of private, permanent homes of the traditional on-site construction started to date the target has been increased from 650,000 to 738,000. Similarly conversions, which got under way at a higher rate than originally expected, have been upped from 50,000 to 100,000.

The temporary re-use program has been increased from 200,000 to 212,000 through addition of units to be financed by municipal governments and colleges. No change is contemplated in the goal of 50,000 housing-type trailers.

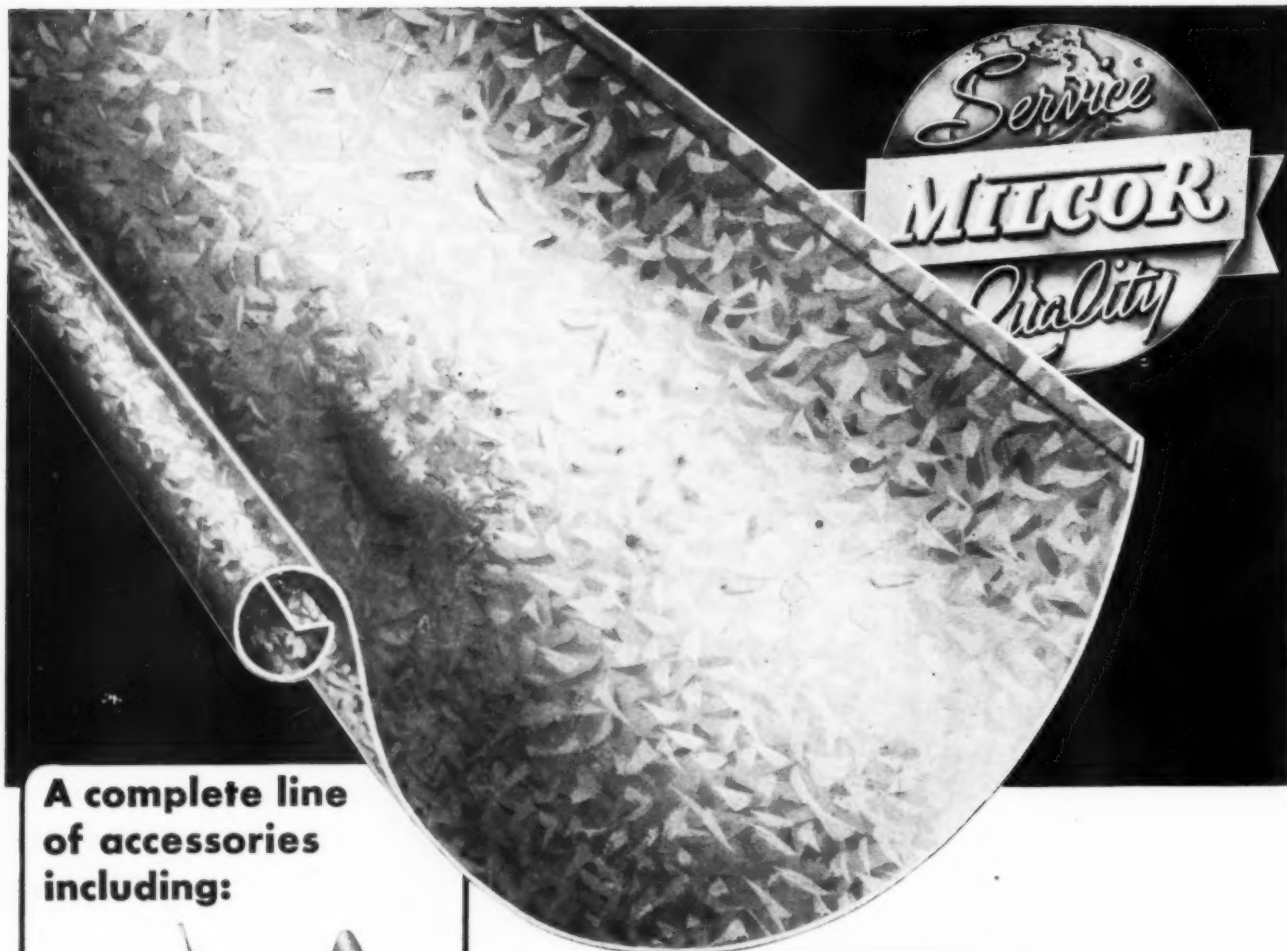
On the other hand, the target of 250,000 factory-built homes started in 1946 has been cut back to 100,000. The reduction results from the fact that development work and the time required in tooling up for mass production will prevent factory-built homes from achieving a peak rate of production before 1947. However, factory production of houses is still a major objective to the program and the prospects are good for a high production level in 1947.

AMERICAN ARTISAN

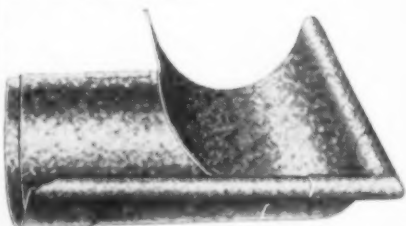
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Jigs And Fixtures

For Sheet Metal Welding—Part I

By
Arthur N. Kugler
Mechanical Engineer, Technical Sales Div.
Air Reduction Sales Company

JIGS and fixtures for welding, in many forms, made a vital contribution to war production. Ranging from a Midwest shipyard's mighty device which rotated the entire hull of a small ship, down to the pocket-sized fixtures for locating parts on small, intricate aircraft assemblies, all assisted in the manufacture of uniform products, rapidly and economically. Their general use represents the attainment for welding of the status of an accepted production technique. It will be obvious, therefore, that this knowledge gained in war-time manufacture will be carried over into the post-war period by all industries and even greater use of jigs and fixtures for welding may be anticipated.

Definition of Terms

It should be pointed out that the terms "jig" and "fixture" as currently employed have been borrowed from the machine tool industry. However, the interpretation of these terms for welding devices is not the same as for machine tools. To the tool engineer, each

of these words has a specific meaning, whereas, in welding, the functions of these devices overlap and in some cases more than one operation may be performed by one unit. Therefore, it has become the accepted practice to group all these devices under the heading, "jigs and fixtures."

The necessity for jigs and fixtures in sheet metal fabrication arises from several conditions. First is the problem of warpage or distortion, which is severest on sheet metal. Second is the maintenance of dimensional accuracy and uniformity of finished product. Third is the facilitating of the welding operation and the securing of faster welding speeds. Frequently the requirement for only one of these conditions may well justify the trouble and expense of making a jig. These devices may be simple pieces of equipment available in every shop or they may be elaborate assemblies. In general they cannot be purchased "ready made," but must be fabricated to suit the needs of the individual job.

At this point it seems appropriate to discuss briefly

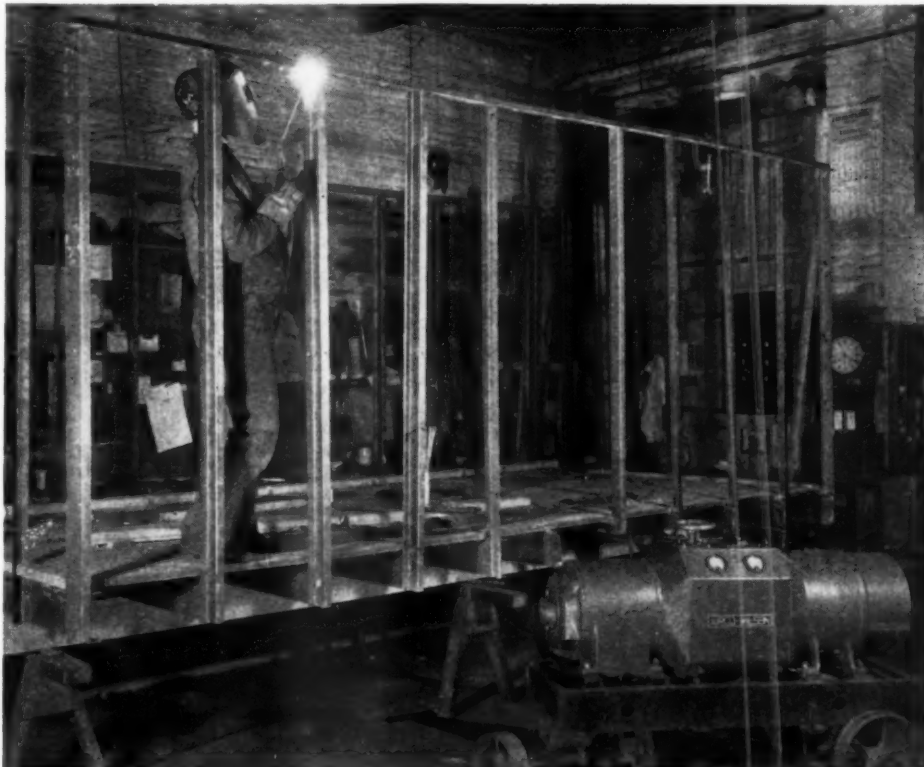


Fig. 1
Metal arc welding sheet metal stampings for truck body frame.



Fig. 2
Carbon arc welding galvanized sheet steel using tin coated copper alloy rod. Galvanizing is not destroyed when welds are made with this technique.

the various welding processes, particularly those modifications of especial interest in sheet metal work, since the process used will influence the jig design. Furthermore, the problems of the sheet metal fabricator differ from those of other users of welding. Since this discussion is limited to the so-called fusion welding processes, no attempt will be made to include the resistance welding processes and the fixtures employed therein.

Metal Arc Welding

Metal arc welding is used extensively for sheet metal welding, particularly with electrodes specifically designed for this class of work. The particular advan-



Fig. 4
Welding of sheet magnesium tank for aircraft use employing the Heliweld process.



Fig. 3
Galvanized steel duct assembly welded with the carbon arc and tin coated copper alloy rods.

tage of arc welding arises from the fact that there is almost instantaneous melting under the arc and therefore there is less heat imparted to the work and, in consequence, less distortion than with other methods. It is important that the welding machine be capable of delivering the low currents at the required arc voltage necessary for sheet metal work. Electrodes conforming to Classification E6013* are generally considered the best suited for sheet metal welding. A typical metal arc welding operation is illustrated in Fig. 1.

Carbon Arc Welding

Under the general heading of arc welding, which includes metal arc welding discussed above, is another process of interest to the sheet metal fabricator, particularly those working with galvanized sheet steel. This process is carbon arc welding with slight modifications to suit the problem. Galvanized steel may be successfully metal arc welded, but in so doing the galvanizing is burned off adjacent to the weld. This naturally exposes the steel to corrosion and defeats the purpose of galvanizing. The condition may be corrected by employing a copper alloy rod provided with a coating of tin. This rod is placed in the joint and melted with the carbon arc, thus forming the connection. The copper alloy provides the filler metal for strength while the tin coating melts and flows down to the juncture of the galvanizing and the filler metal thus bridging the zone in which the galvanizing may have been burned off. In Fig. 2 note how the arc with the carbon electrode is carried on the filler rod, for it is by this technique that burning of the galvanizing is avoided. A typical assembly by this method is shown in Fig. 3.

*Metal arc welding electrodes are covered by a joint specification issued by the American Society for Testing Materials and the American Welding Society under the serial designation A233-45T. Six classifications are provided for mild steel electrodes of which E6013 is one.



Fig. 5
Oxyacetylene welding of sheet aluminum (52S) duct for aircraft.

Inert Gas Shield Arc Welding

Still another arc welding method offers possibilities for sheet metal fabrication, viz., inert gas shielded arc welding. This process found extensive use in war production in the welding of magnesium alloys without flux. Subsequently, it has been found that it may be used on many other metals, e.g., aluminum, stainless steel, Monel, etc. The equipment for this procedure consists essentially of a special holder or torch which grips a tungsten or graphite electrode; this electrode is connected to one side of the welding generator, the other side being grounded on the work.

In addition to the electrical cable connection to the



Fig. 7
Silver brazing sheet brass blades to $\frac{3}{8}$ " brass end plate with Easy-Flo. This assembly is for an air conditioning blower rotor.

holder, there is provided a gas hose to carry an inert gas such as helium or argon. When the arc is struck and maintained on the work, the gas, issuing from a shield around the electrode, blankets the molten metal protecting it from atmospheric contamination. Filler metal, if necessary, is introduced in a manner similar to that used in oxyacetylene welding or that described above under carbon arc welding. Generally speaking, helium is employed with standard direct current welding, while argon is used with special alternating current equipment. In addition, while graphite electrodes may be used, present operations seem to indicate better results with tungsten electrodes. A typical operation with this equipment is illustrated in Fig. 4.

Oxyacetylene Welding

Oxyacetylene welding is also an important process in sheet metal fabrication, especially on the lighter gauges. On long seams or extensive welding the large amount of heat released generally causes warping. However, this may be controlled by appropriate jigging together with predetermined welding sequence.



Fig. 6
Illustrating the oxyacetylene braze welding of galvanized steel using liquid flux and standard braze welding rods.

The nicety of control available in the oxyacetylene flame makes it possible to weld thicknesses of the order of 0.035 inch and even less. In addition, the oxyacetylene process may be used on light gauges of non-ferrous metals such as aluminum, etc. Fig. 5 shows oxyacetylene welding of sheet aluminum.

Braze Welding and Brazing

The oxyacetylene flame may be used for other joining methods than welding, notably braze welding with brass filler rods and low temperature brazing with silver brazing alloys. With the braze welding technique, it is possible by the use of a suitable flux

(Continued on Page 146)

Getting the Most Out of Your Press Brake

1001 Standard and Special Bending,
Forming, Flanging, Punching Operations
Your Press Brake Can Perform

By Ernest E. Zideck
Sheet Metal Consulting Engineer

Forming Sheet Metal for Hollow Beads and Wire-Inlaying

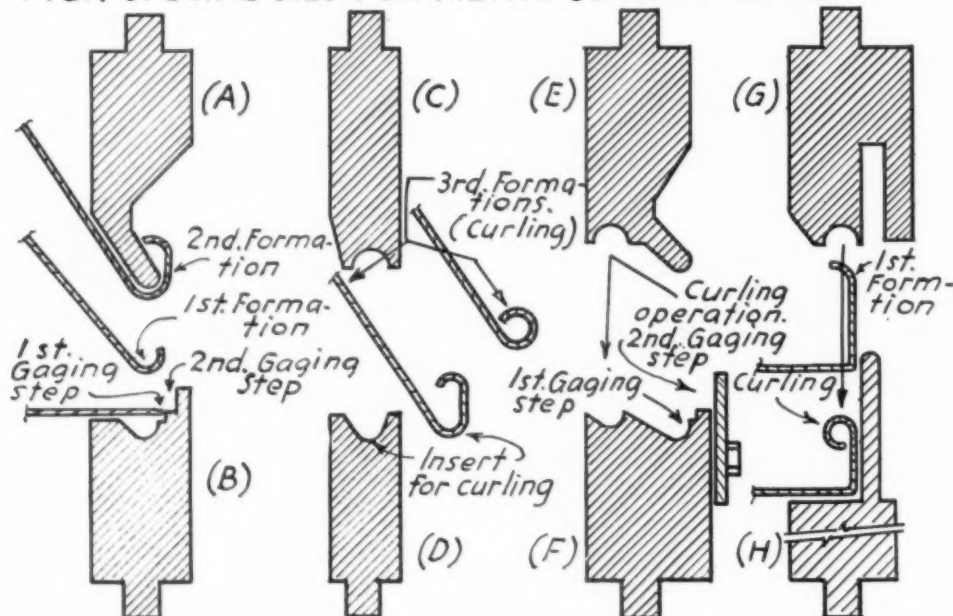
IN sheet metal working, a very important phase of the work consists of stiffening the edges of the metal which reach out from the walls or the body of the product, being the product's exposed terminals. In many other instances it is necessary to stiffen the thin and insufficiently rigid sheet metal, and the common practice has been to double or treble the metal, turning the edge over the wall or the body and thereby rendering the metal terminals not only thicker and more rigid, but minus the "sharpness" which a sheared metal invariably exhibits. Sharp edges are liable to cut the hands of the users of the product, and to avoid that, even if the metal is rigid in itself, such as are gauges of the metal from 16 down, the practice prevails to bevel the exposed edges or at least grind or file off their sharpness. Beside the aforesaid turning over of the metal for stiffening and resulting roundness of the metal-terminal, the most common practice has been to fashion the metal terminal into what is called a "hollow bead," which resembles a

terminal having a wire or rod inlaid in the turned over metal, and these hollow beads are formed by "curling" the metal over itself, as may be seen in Figure 1, of the drawings, at (C) and again at (H) of the several views. Wire-inlaying is accomplished by similar metal-edge turning or curling, but inasmuch as the wire or rod by itself becomes a part of the forming means, over which the metal is rolled, it is not necessary in this operation to "curl" the metal, but a simple double, although radial bend, as shown in Figure 8, is sufficient. In round objects such as cans, pails, lids and such other utensils, the hollow beading and wire inlaying is done in a "turning machine." But long, straight metal strips are beaded best, and wire-inlaying in these strips is accomplished most satisfactorily, in a Press Brake.

Special Dies

Various special press brake dies have been designed and are in use, by which the "curling" of the metal

FIG. 1 SPECIAL DIES FOR METAL CURLING-BEADING



may be accomplished smoothly and accurately by a few strokes of the ram. As shown at (B), in Figure 1, the die is shaped with two steps in its working area, the steps serving for gages distancing the metal worked. The first gaging step holds the sheet in position for the first, initial rounding-up of the metal terminal, and the second gaging step holds the sheet distanced for the second operation, shown at (A) in the drawings. A second set of dies, as at (C) and (D), is used, to complete the "curling" operations shown. At (E) and (F) may be observed a set of dies, combining means for curling the pre-formed metal with the means of preforming, which latter are almost identical with (A) and (B), except that the second gaging step is accomplished by a bolted-on gage, shown at (F). The die-set illustrated at (G) and (H) is used to complete a curling operation on a strip of metal that has been bent to 90 degrees and, as a first step for curling, was processed through an "edge-rounding" operation, such as shown under "first operation" above the die at (B). Evidently the dies (G) and (H) will be used infrequently, because we can do the curling in such dies as (E) - (F), for instance, and do the 90 degree bend afterward. These special dies are often inadvisable, since they can not be used for other sizes of the bead than the one for which they have been made. In quantity production, such dies undoubtedly will pay for themselves, but for shops doing only an occasional bead, and that of a certain size, it will prove to advantage to consider a die-set that is adjustable for various sizes of such a formation.

What applies to the die-sets grouped under the Figure 1, may be applicable to the dies shown under Figures 2 and 3, although the latter are less expensive, and may be considered part of a standard equipment, useful in any shop. At least one set of dies having a "rounded" working area, although not necessarily the special dies shown in Figures 2 and 3, can be profitably used in any preforming of sheet metal for hollow beading or wire inlaying. The common practice has been to do preforming in dies of the "V" shape, or the 90 degree shape, with results indicated in Figures 5, and 6. The sharp male die produces an "air-bend," partly radial, but if the bend is too pronounced and the grain is caused to move, there ensues a hardened "ridge" in the metal.

If the bend is on a degree as in Figure 5, there inevitably will be results shown in Figure 6, with the edge of the metal coming to rest against the wall of the die and preventing the "closing" of the metal over the wire. Viewing the metal formation as it appears in Figure 6, we see that a "third" bending, and that in the middle between the two completed bends, would be necessary, to facilitate the closing. But if we do that, we shall form just another "ridge" in the metal, which can not be evened or straightened out in a closure, by the means illustrated. If we must do the preforming in these standard dies, it would be better to "feed in" the metal gradually, with the ram adjusted for continuous movement, thereby obtaining a fairly "radial" formature, with the metal edge pointing down, and not contacting the wall of the die, as in Figure 6.

Adaptability of 'V' Die

For the above described operation, the narrowest opened "V" die is the best, in that we can distribute the "bends" over the area of the sheet measured off for wire inlaying, without any one of the bends being much pronounced, in other words, the metal would be formed radially, with no "ridges" in it. For wire-

FIG. 2 STANDARD BEADING DIES

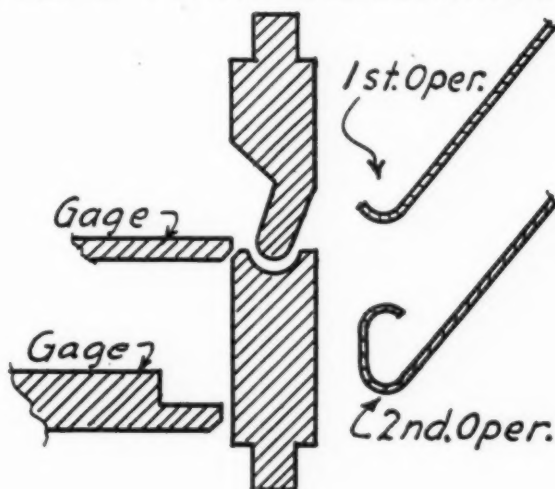


FIG. 3 BEAD CLOSING DIES

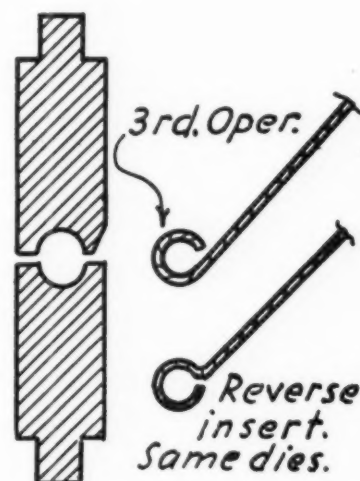
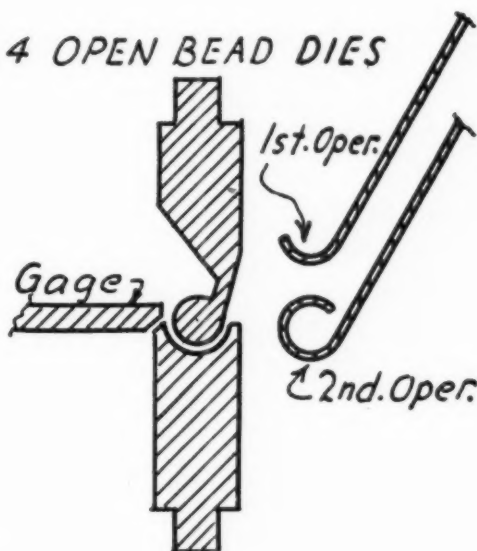
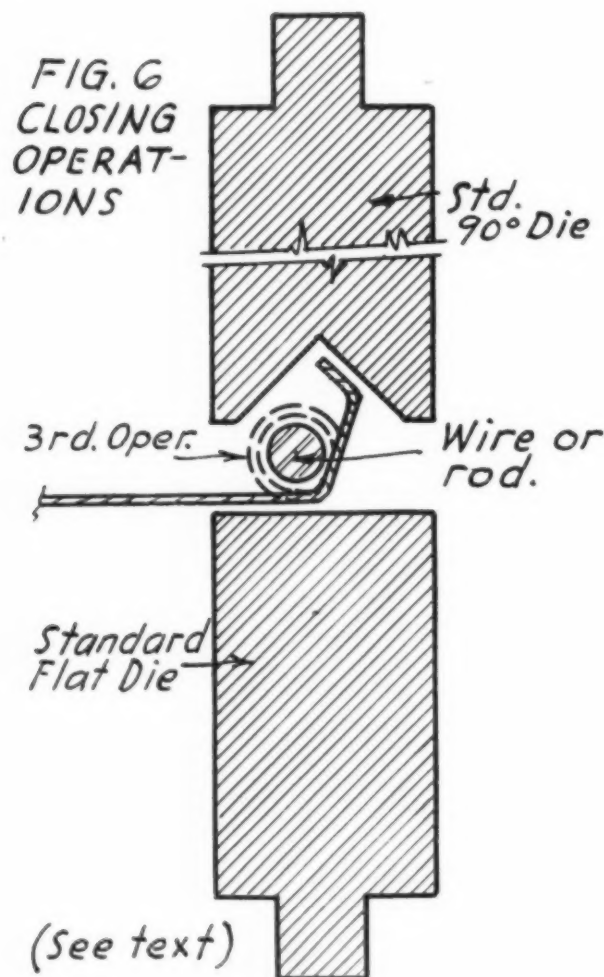
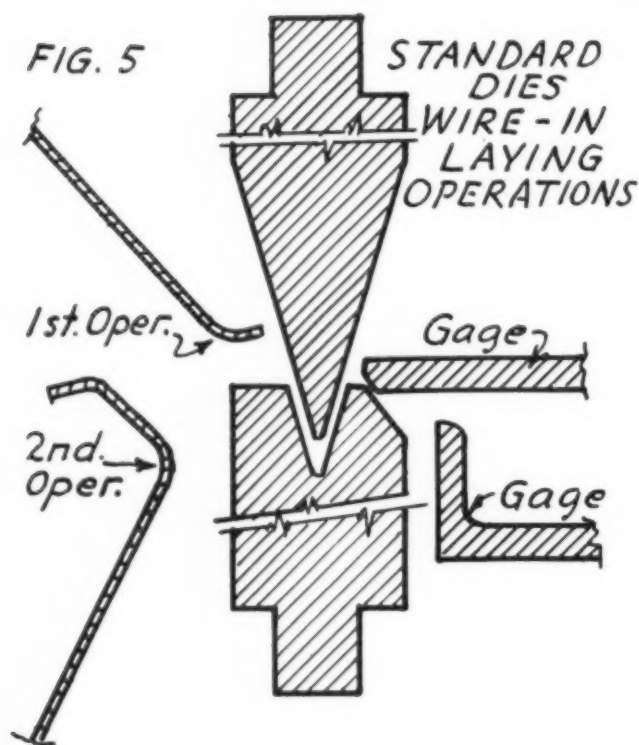


FIG. 4 OPEN BEAD DIES





inlaying, this preforming of the metal will be satisfactory, although for "curling" the metal into a hollow bead it might not be so. But, in most shops there will be, as a part of a standard equipment, a male "V" die, the working area of which is rounded, as shown under Figure 7. Such a die can be used, then, in preforming the edge-portion of the sheet radially, and doing the second bend, both bends being done in a die such as the female die in Figure 2. Where the described dies are absent and work at hand does not warrant their procurement, the shop can construct, inexpensively, a male die illustrated in Figure 7, and use a rubber bed instead of the female die, the resulting formation being not as sharply pronounced, or uniform, as if done in special steel dies, but good enough for wire-inlaying and eventual hollow beading. The advantage of a rubber bed in holders as shown in Figures 7, and 8, lies in its flexibility, so that smaller and larger radii dies can be accommodated in the bed, the walls of the holder at the same time congesting the rubber, so that it will offer enough resistance to the sheet metal formed in it.

Characteristics of Process

In these "curling" operations it should be borne in mind that in the preforming of the metal in steel dies, and more so in dies made especially for a certain size of the bead, as in Figures 1 to 4, the sheet metal is being "struck" by the male die and pressed into the steel surface (working area) of the female die with force. The force applied is sufficient to harden the metal struck, so that the "form" of the metal, assumed under the stroke, will not easily change, but will remain intact under the "closing" operation, which consists of rolling the metal (not striking and hardening it). Thus we see at (G) - (H) in Figure 1, that the rounded terminal of the sheet, as shown in the first formation, when struck by the descending die (G), will continue in its first-formed shape irrespective of the pressure from above forcing the sheet metal to bend, below. But, because this second bending takes effect in the unhardened portion of the metal, while the initial radial form of it is hard, this hard portion will act as an agent in determining the shape of the unhardened metal's formature. This, then, is the "curling" of the metal. It is not absolutely necessary to have the male die provided with the "radial" cavity as in (G), because even if we use a flat die in that same relation, the hardened "first form" in the sheet metal will remain intact under the pressure of the stroke, and induce the unhardened metal below it to follow in its shape. In these cases of the metal being left "uncongesting" into a radial cavity as in (G), there will ensue a perceptible "ridge" in the metal at the point of the hardened radial, where it meets the unhardened metal, but this ridge is noticeable, in soft metals, also if we use the cavity die as in (G). If we inlay wire or rod, the pressure of the die against it will straighten out the ridge, but in "hollow bead" a trace of it will remain.

'Set-In' Type Bead

In Figure 3 we see, in the second piece of sheet metal processed through the dies, a "set-in" bead, which is accomplished best by forming the regular bead first, as in the view above, and then turning the sheet and let the die strike again. If we want the bead to be wholly set in, we use a flat lower die and a sharp male "V" die to strike, but it is necessary that we "gage" the bead upon the flat die and press against the gage. In certain cases we can use a corresponding

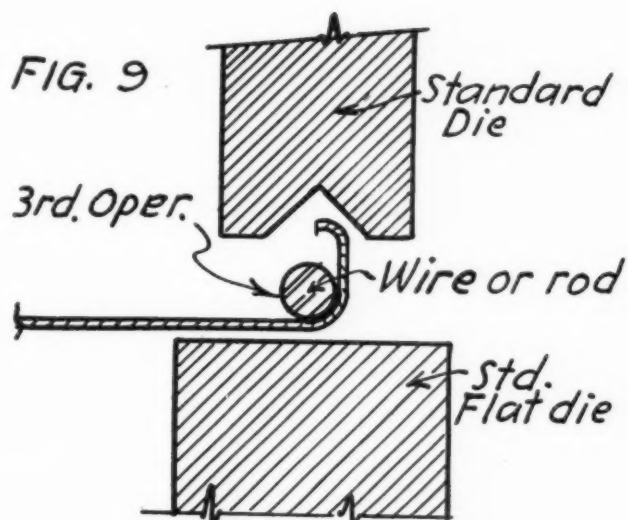
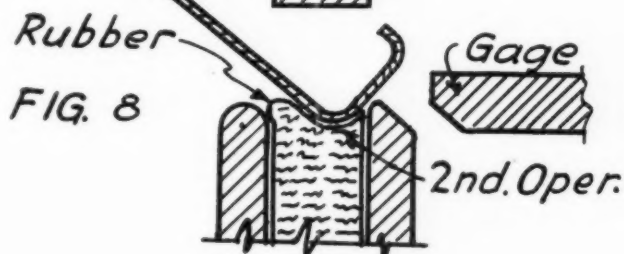
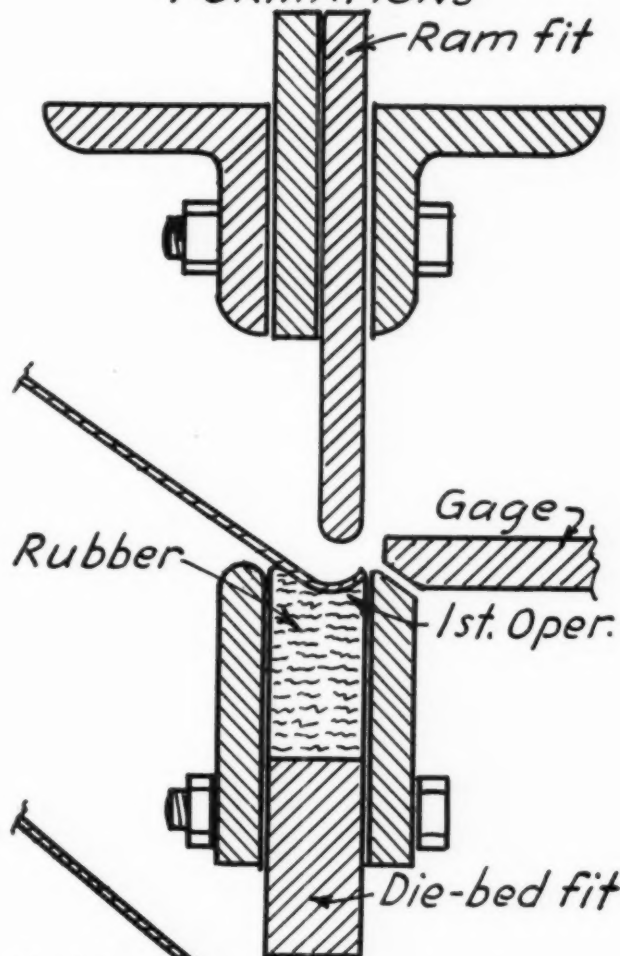
width female "V" die in the bed, with the flat die in the ram, the bead being forced into the opening in the "V" die, the "inset" resulting. What has been said about the use of a flat die in "curling" under (G), above, may be applied to closing the bead pre-formed as in (A) - (B), or as in Figure 2, or as in Figure 8, although in the latter instance, the preforming having been done in rubber, and the radials not having been hardened as happens in forming them in closely adjusted steel dies, the "curling" will not be as smooth. There will be a tendency of the metal "kinking" in the middle between the radials, so that the resulting hollow bead would be rather "ridged" in parts. This can be overcome by using an upper die as shown in Figure 9, or a female "V" die, the inner walls of which would press against the sheet metal and prevent its kinking. But, if we use a rubber bed, as shown in the lower view in Figure 7, we can "feed in" the metal under an adjusted continuous ram movement, preforming the whole area that is to "curl," so that in closing, no kinks in the metal would ensue.

Closing the Bead

Special dies as in Figure 4, may be used for forming partially closed hollow bead, which can be accomplished by either, two operations, as shown, or by "feeding." The use of this shape male die necessitates the additional operation of "pulling" the formed metal over the die, to the side of the brake and out of the die. Unless we want this kind of bead "hardened" by doing it in closely striking dies, in two operations as shown, we can accomplish the formation in any other of the dies, such as in Figures 2-3, by adjusting the ram descent to leave the bead partially open. Same results can be obtained by preforming in the rubber bed, as in Figures 7 and 8 (with observance of the "feeding" formation in the above text), and closure of the bead to the desired depth by ram adjustment. All of these particulars are best determined by the press brake operator, who knows what dies are in the shop, or available for the work at hand, and which would do the job most satisfactorily and in a minimum of operations. It will be practical for the operator to do certain "bead-closing" by using a rubber bed for the upper die and a flat die for the sheet to repose on, but obviously, in this choice of means and their arrangement must be considered the behavior of the metal under formation. If we choose rubber for the upper closing means, the edge of the metal radially preformed would have to point down far enough not to be cutting into the rubber, which can be easily done by preforming the metal by feeding it in, as mentioned above. Once we have at least a half-circle formed, the additional bend at the base of the "curling-up" metal area, as in Figure 8, will cause the metal edge to point down (instead of as is shown in Figure 9), and the rubber will press upon the already rounded portion of the sheet without being cut into by the sharp metal edge. A wider area preforming is advisable also in wire-inlaying, so that the metal edge points down instead of towards the wall of the cavity in the die, as in Figure 9.

All of the foregoing, inclusive of the number of illustrations of special, standard, and eventually shop-made dies, is intended to allow the press brake operator (or production man), to review the various available (or procurable) means, by which the operations of metal "curling" into hollow beads and into preformations for wire or rod in-laying can be accomplished in a Press Brake.

FIG. 7 ADJUSTABLE FORMATIONS





Air Hammers Speed Up Seam Closing

By R. C. Nason

THOUGH the time has not come when a machine can entirely replace manual operations in air conditioning fabrication preliminary surveys seem to point to the extended use of power tools to magnify to an important degree the output per man. The day automatic electric Pittsburgh lock forming machines arrived was a red letter day in the march of the machine over the hand. This device was preceded, of course, by the use of the power press brake for forming flat-lock seams and Pittsburgh seams. Many sheet metal fabricating plants have also been using air and electric hammers for seam closure for some time. To gain information in this general direction a brief survey was made in four Metropolitan New York shops.

In the plant of Frank J. Townsend, Mt. Vernon, N. Y., well-known in local school, institution and public building air conditioning, air hammers are in daily use to handle steel gauges to No. 16. The same tools, through the use of portable compressors, are also used by this firm on location for drilling operations. The owner further stated that seam "knock down" pays big dividends when the mechanic has volume work to do that may require "knockdowns" over a good part of the day. Mr. Townsend conservatively estimated the overall time saving against hand malleting as 50 per cent.

The Townsend shop has also found that perhaps the greatest saving comes on location, when masonry has to be drilled for foundation and hanger bolting. In

this case time saved was estimated at 90 per cent versus manual operations. Maximum saving with air hammers in the shop was said to be possible when there are rigid air lines with numerous connections, for this makes it unnecessary to move the work to the area of the compressor. Long rubber hose lines are undesirable, due to excessive maintenance and the danger involved in having the lines on the floor.

Under the Townsend method of operation a single mechanic or foreman and crew is held responsible for turning out a complete installation fabrication. This implies that all Townsend men are experts in air conditioning, warm air heating and ventilation. If the contract is a large one there is a single foreman and he has several mechanics under him. The contractor leaves it to the judgment of the leader to produce the assembly of ducts and fittings according to his preferred work methods. These may or may not involve the use of air tools.

"Knockdowns" of Pittsburghs do not require bucking or backing up of ducts, which are laid on benches or, preferably, on the floor. Use of bucks or monorail would not provide satisfactory closure. Caution against use of excessive pressure of air tools in such work was also offered by Mr. Townsend, though more pressure is required for handling heavy than for light gauges of metal.

The absence of backing on Pittsburghs is in contrast to practices in the Townsend forming flatlock seams. Flanges, usually 1/4-in., are started on the

power press brake and finished by wooden mallet on the grooving bar. This type of seam applies to ducts larger than 12 in. by 24 in. and there may be one, or two, seams depending on raw sheet stock available, duct sizes and other factors.

Although some sheet metal shops are known to ship out to the job considerable quantities of ducts and fittings knocked down, or in panels, the Townsend shop completes practically all work in the shop prior to trucking.

Benefits of machine versus hand were duplicated in essential features at the plant of the Universal Sheet Metal Works, Bronx, New York City, where Superin-

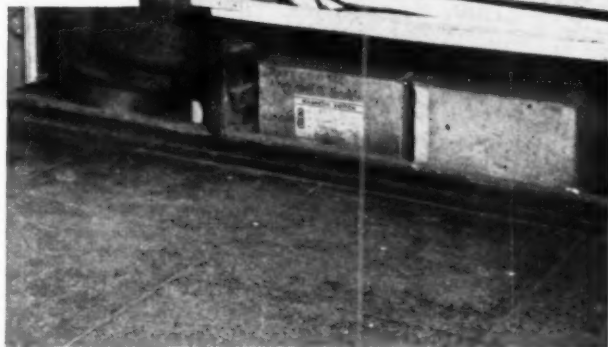
transport to compressor areas undesirable. The shop head urges the use of rigid air lines as superior to bringing work to the compressor.

A generous 3-in. faced wooden mallet is in favor at present in this shop as an improvement, for speeding the work and imparting a satisfactory finish. The mallet has an 18-gauge steel face cap with turned-over ears, or laps, at five points about 2 in. on centers for side screws. Superintendent Marcus declares that if there is 50 ft. or more of Pittsburgh "knockdown" to do, time saving will be at a ratio of about 10 to 1 in favor of the air hammer. Saving in cost is commensurate. The air hammer is strictly a shop tool here and in daily use.

A visit to the shop of the Consolidated Sheet Metal Works, Long Island City, brought practically the same answers on air hammers, but Superintendent Harold Fritz points out that use of air hammers on flat-lock seams on the grooving rail result in a distorted duct and the seam area somewhat scalloped in finish. So the air hammer is used only on Pittsburgh "knockdowns." Consolidated's air hammers are not taken to location because electric hammers are held to be more suitable, less difficult to carry, simpler to handle. Con-



Fig. 1—Consolidated Sheet Metal Works. Left is an air hammer with an edge guide to prevent the head from running off the Pittsburgh seam in duct fabrication. Right is the storage container used for the electric hammers this company favors.



tendent Marcus states that use of air hammers balanced rather evenly with hand malleting as to time but the air hammer makes better-appearing, tighter joints than malleting. This plant specializes in drying and ventilation and has done so for many years past. In the new, large addition greater use of air tools will be made, advised Mr. Marcus.

Much of the work at Universal is in the heavier gauges such as 16 and 18. Little use is made of gauges lighter than 24. Most contracts involve special sheet metal pieces with little duplication in size and design of ducts and fittings. Often such pieces, Pittsburgh-seamed, weigh 150 pounds each, thus making their

solidated has three electric hammers each stored and transported in an individual steel box with padlock.

The kit includes a ratchet attachment and these tools are used for drilling masonry bolt holes in the installation procedure. Air hammers, on the other hand, are the favorite shop tool for Pittsburgh "knockdown" and are in use here for a large part of the day. Following through such work, after duct panels leave the lockforming machines, they go to one or more mechanics who, placing component panels of ducts and fittings on a bench, turn the flanges of seams over 45 degrees every 3 ft. to hold the set. Then the work is transferred to one or more nearby me-

chanics for closure of seams by air hammer, on the floor or work bench.

The air hammer men turn the seam over 45 degrees on the forward run, then complete the full 90-deg. on the backward journey of the hammer head. Seam treatment on an 8-ft. section as indicated and clocked on a stop watch required 2 minutes and this is contrasted to 10 minutes for a comparable hand malleting operation.

Under Consolidated methods, much of the duct work, especially large jobs, leaves the shop unassembled, or knocked down. Large ducts, also, frequently have flatlock seams, one in some cases, two in others. In other instances there are four unclosed Pittsburgh seams. This is tantamount to shipment of panels for location assembly. The practice enables transport through narrow doors, up and down narrow stairways, through basement windows and other tight spots.

When ready to erect, seam closure is on the groove rail for flat locks and by hand mallet on the floor for Pittsburghs. Most flat seams are started in the shop by power press brake, flanges turned over about 135 degrees. Completing the joint on the bar on location is found to be fairly simple.

Procedure in the air conditioning sheet metal shop of Carroll Sheet Metal Work, Winfield, L. I., was explained by Martin Langberg, engineer and Nathan Forster, superintendent. This shop handles heating, ventilating and air conditioning almost entirely. Ducts up to 12 in. by 24 in. are fully Pittsburghed by air hammer in the shop, the same being true of fittings. Larger ducts frequently have their initial flat seams formed in the shop on the power press. The work is trucked to the job knocked down and closed by mallet on location for the same reasons that applied in previously cited cases.

Engineer Langberg revealed that he is working on a design of power tool to close flatlocks on a grooving bar, none being available at present, he said. This

shop likes its three air hammers as time savers so well that they would like to increase the use of power tools in every way. As things are now the Carroll shop closes its Pittsburghs by air up to 16 gauge except when they are unfortunate enough to have received poor quality of iron.

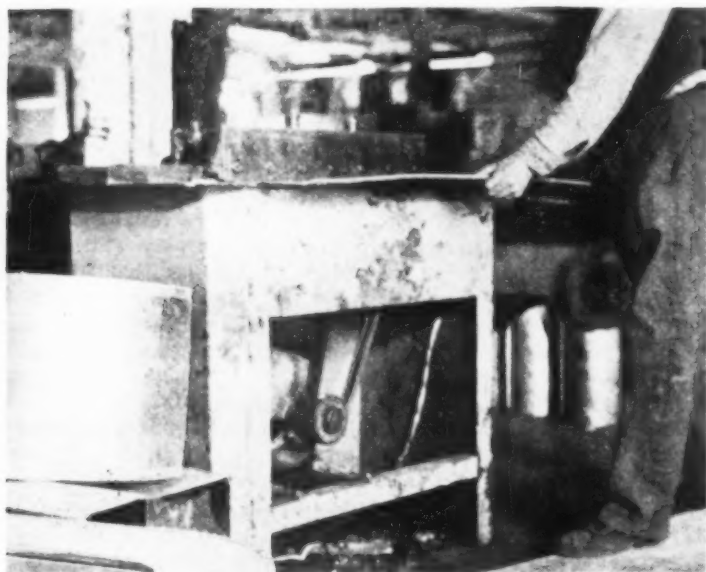
In U. S. Navy and marine work angle iron section joints are required in contrast to the easier to apply slip joints. Though the Navy requires that angles be installed by riveting many customers accept spotwelding. So Mr. Carroll has two active electric spot welders both in daily use. Spots are on 2½ in. centers, as a rule and work out satisfactorily. Angles are 1 in. by 1 in., on the average, and opposing flanges are connected by ¾ in. bolts on erection.

In the opinion of Superintendent Forster air hammers "earn their salt" chiefly on jobs that run into \$500 shop labor costs and more and on location at all

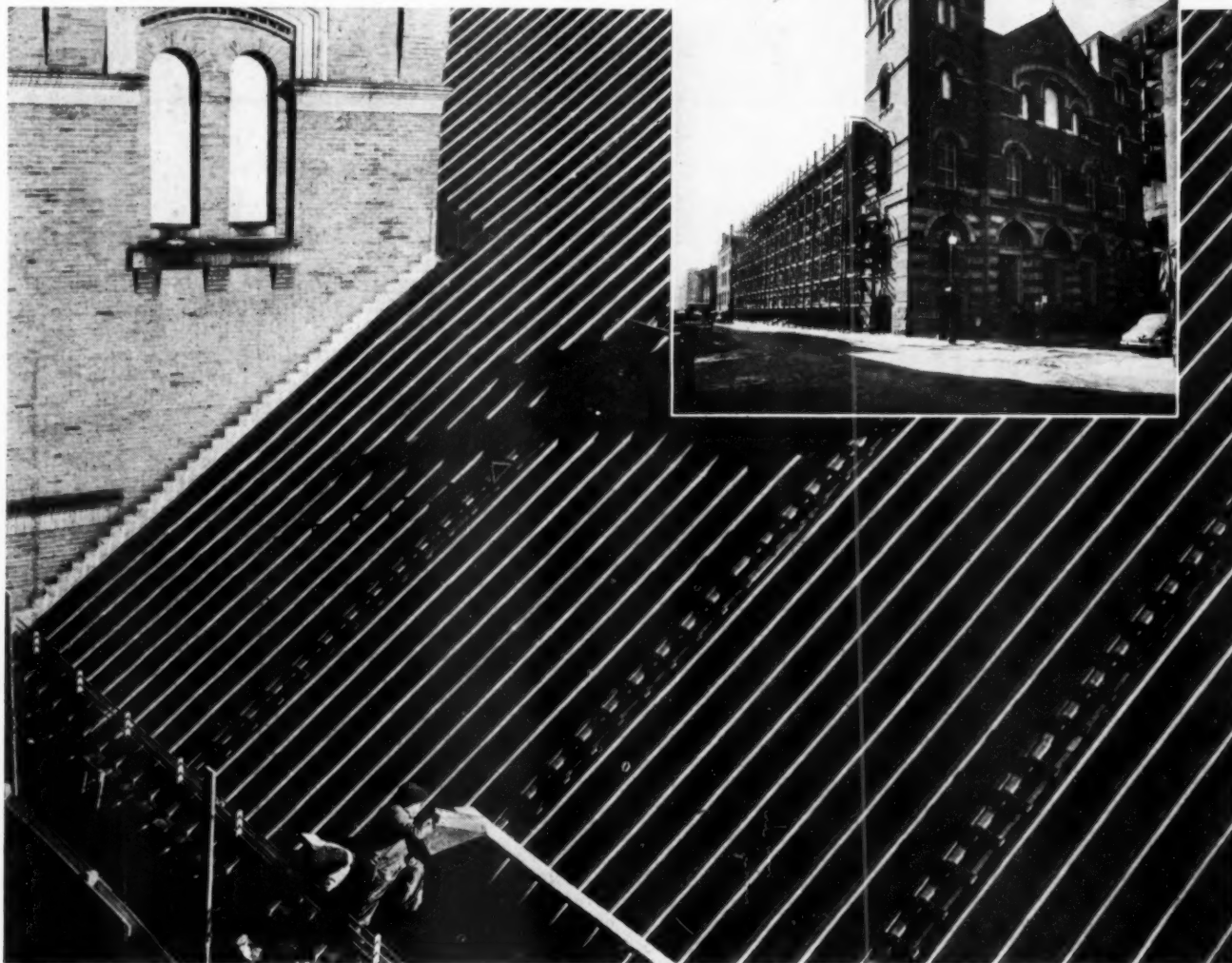
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Fig. 2—Carroll Sheet Metal Works. Above, right, Spotwelding angle iron transverse duct section ends (where sections join). Below, right, Turning up side flanges for connection to Pittsburgh seam when duct sections are too irregular to be pressed in machine. Below, Duct panel being given Pittsburgh Seam on machine. Mechanization increased output 1000 per cent.



• St. Mary's Church in Boston, Mass., recently re-roofed with approximately 40,000 lbs. of Revere sheet copper by A. Belanger & Sons, Inc., Cambridge, sheet metal contractors. General contractors were the John Bowen Co., Boston, and the metal was supplied by The Herrick Co., Boston distributors.



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ASSOCIATION ACTIVITIES



Arthur Frazee Passes On

ON September 2 one of the widely-known members of the National Warm Air Heating and Air Conditioning Association, Arthur F. Frazee, died in Bronson Hospital, Kalamazoo. His death came only one day after his 59th birthday and was a climax to an illness of eight weeks, during which he had undergone three operations.

Born in Michigan in 1887, Mr. Frazee had been educated in that state and was a graduate of the University of Michigan.

His early history was that of an educator who made an excellent record for himself, both as a teacher and an administrative official. In fact, when he first arrived in Dowagiac it was as superintendent of schools. He held this position during the first World War and did an outstanding job of organizing Liberty Loan drives, originating techniques which were adopted thruout the state.

From his position as school superintendent he went to the Rudy Furnace Company and was associated with them for many years. Chrysler-Airtemp was the next company Mr. Frazee was with and then in 1939 he became sales manager of the Dowagiac Steel Furnace Company, the position he still held at the time of his death.

Mr. Frazee was prominent in many fraternal organizations but it was Rotary, probably more than any other, that claimed his most active attention. He had just been elected governor of his Rotary district in June of this year.

Members of the Association will remember Arthur Frazee not only for his sterling work with the Association, on committees and the like, but also for his wonderful personality. Further, many will regret the loss of a man who had the gift of oratory that Mr. Frazee was blessed with. Men who can express themselves cogently, on short notice, are rather rare, but men who can rise to their feet and render a full-fledged oration are far more scarce. That, combined with a tremendous stock of humorous stories, made Mr. Frazee a welcome speaker on any occasion.

It can only be with the most sincere regret that the warm air heating industry views the passing of such an outstanding man as Mr. Arthur Frazee.

Detroit

THE Detroit Association of Warm Air Heating and Sheet Metal Contractors, Inc., has recovered sufficiently from the excursion to Niagara Falls to send in a report that the trip was enjoyed by all in attendance. Eighty-eight people made up the mixed party and the popularity of the cruise is attested to by the fact that plans are already being made for another such outing next year. The pictures at the right were taken by Otto Schultz and the expressions on the faces of the subjects tend to bear out the statements of Marshall Vanassche, chairman of the cruise, that a good time was *definitely* had by all.



Association Activities . . .

THE National Warm Air Heating and Air Conditioning Association has announced that the basis for all its coming publicity and advertising programs, the new "Indoor Comfort" emblem has been made ready for release to members. As announced at the mid-year meeting of the Association, the emblem is to keynote the drive to promote the theme of "Indoor Comfort" as opposed to a mere heating or cooling of the home.



Superiority of warm air heating is to be emphasized through publicity given to the several factors involved in "Indoor Comfort": (1) heated or cooled air; (2) humidification or dehumidification; (3) air cleaning; (4) air circulation; (5) fresh air; (6) pure air without any germs; (7) sufficient air.

General aims of the publicity program may be said to include the education of the installer of heating and air conditioning equipment in order to secure better installations, and also the education of the consuming public to make them conscious of the benefits of warm air conditioning and encourage them to demand the comfort which only warm air can give. The Association also aims at securing a more proper share of the construction dollar for the warm air heating industry.

Refrigeration and Air Conditioning Exposition

The fourth All-Industry Refrigeration and Air Conditioning Exposition will be held in the Public Auditorium, Cleveland, Ohio, October 29 to November 1, with more than 300 exhibits of the industry's newest equipment and latest developments. Every branch of the industry from parts makers to manufacturers of complete refrigeration and air conditioning units will be included among the exhibitors.

The exposition is sponsored by the Refrigeration Equipment Manufacturers Association, comprising 100 member companies which manufacture all types of refrigeration and air conditioning equipment; with the co-operation of the Frozen Food Locker Manufacturers and Suppliers Association (members which build and equip frozen food locker plants).

The Cleveland Auditorium provides 75,000 square feet of exhibit space.

Wisconsin

The Sheet Metal Contractors Association of Wisconsin, Inc., will hold their thirty-second annual convention February 9 to 12, 1947, at the Schroeder Hotel, Milwaukee.

The Convention committee consists of Howard Benning, Chairman, John Goodwin, R. V. Mundigler, Harry Eschenburg, Paul L. Biersach and W. J. Hielscher. The committee is proceeding with the arrangements and promises a fine convention.—Paul L. Biersach, Secretary.

Institute Picnic

The Furnace, Air Conditioning Sheet Metal Institute, Chicago, staged their 15th annual basket picnic at Long Lake Park, Long Lake, Illinois, on Sunday, July 14th.

Generous supply house purchases of tickets helped make the affair a success. There were races for boys and girls (penny scramble, sock race, potato rolling, running, bat ball, hop-on-one-leg, shoe scramble, elastic band); ladies, measure waistline; men, pillows in pillowcases; couples, blind banana feed; prizes for newlyweds, oldest and youngest married couples on the grounds, service man with the longest time in service; and as usual the pie eating contest sponsored by Accurate Manufacturing Company.

The Institute meets every second and fourth Friday at the Institute Research Home, 1916 W. Fullerton Ave., Chicago. Non-members are invited to attend. The Institute's special 10-night educational program is being arranged by the Educational Committee under the direction of Barney Sanders.—Arthur Johnson, Secretary, 3437 N. Claremont Ave.

Indiana

The Blue Room of the Antlers Hotel, Indianapolis, was the meeting place for the second quarterly meeting of the Sheet Metal & Warm Air Heating Contractors Association of Indiana, Inc., on Saturday, August 10th.

Attendance was good in that twelve of the officials were present. Problems stressed were: need for more association publicity material to contractors, greater interest created by the officers, directors and members in a state organization, and the need for better service to the contractors of the state.

In order to lay a firm foundation for the coming 1947 convention, the date was set for Monday and Tuesday, February 3rd and 4th.

At the conclusion of the meeting, Secretary Jackson tendered his resignation effective upon the discrimination of the officers and directors. Under veterans' benefits, Mr. Jackson is returning to Indiana University in Bloomington to continue his business course. Homer Selch will fill out the remaining year as Secretary-Treasurer.—Fred E. Jackson, Secy.

Coming Conventions and Meetings

1946

Oct. 29-Nov. 1—Refrigeration Equipment Manufacturers' Association. Fourth National Exposition. Cleveland Public Auditorium. R. Kennedy Hanson, Show Director, 1107 Clark Building, Pittsburgh 22, Pa.

1947

Jan. 27-30—American Society of Heating and Ventilating Engineers. 53rd Annual. Hotel Statler, Cleveland, Ohio. A. W. Hutchinson, 51 Madison Ave., New York 10, Secretary.

Jan. 27-30—7th-International Heating and Ventilating Exposition. Lakeside Hall, Cleveland. Charles F. Roth, manager of the Exposition, International Exposition Co., New York.

Jan. 29-30—National Warm Air Heating and Air Conditioning Association. Hotel Cleveland. George Boeddner, 145 Public Square, Cleveland 14.

1947

Feb. 3-4—Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc. Annual. Homer Selch, 944 Hosbrook St., Indianapolis 3, Ind.

Feb. 9-12—Sheet Metal Contractors' Association of Wisconsin, Inc. 32nd Annual. Schroeder Hotel, Milwaukee. Paul L. Biersach, Secretary, 225 E. Michigan, Milwaukee.

SHEET METAL WORKERS SAY—

We're finding new uses for it every day

There are so many different uses of Wheeling Expanded Metal that it's a big job to keep track of them all.

As one metal shop proprietor puts it, "I don't think there's a building in town that isn't a prospect for some kind of Wheeling Expanded Metal job.

"Apart from window and door guards, we are finding a big market for transom, shutter and tree guards.

"The different sizes of Wheeling mesh adapt themselves to almost any use and the many special fittings make it easy for us to do the job.

"One thing our customers appreciate is the neat,

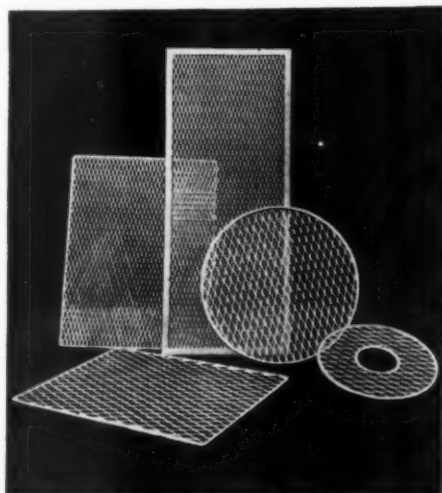
durable quality of expanded metal compared to other kinds of materials. They know it's going to last and that it is easy to keep clean and sanitary, and because it is cut from a solid sheet it can't ravel.

"The main thing for us to keep in mind

is how many opportunities there are to use it even in places where other materials have been used in the past. That's why it's a good idea to know all about the different sizes of mesh and the various fittings available."

Note: Send for illustrative material.

Light, free ventilating and strong, Wheeling Expanded Metal is easily made up into good-looking, substantial, long-lasting guards, screens, grilles of all kinds.



WHEELING CORRUGATING COMPANY
WHEELING, WEST VIRGINIA

BOSTON
NEW YORK
BUFFALO
CLEVELAND

PITTSBURGH
COLUMBUS
DETROIT
CHICAGO

PHILADELPHIA
RICHMOND
ATLANTA
LOUISVILLE

MINNEAPOLIS
ST. LOUIS
KANSAS CITY
NEW ORLEANS

Equipment Developments

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 110 and mail to us.

△ Indicates manufacturer not listed in 1946 Directory.
● Indicates product not listed in 1946 Directory.

96—Heat-O-Meter Controls

The Miller Heat-O-Meter Company, 1434 W. Atkinson Ave., Milwaukee 6, is producing two new models of the Day-Nite Heat-O-Meter combination control units.

The Series QD2 units include an improved dual time switch for turning the burner off and on night and morning; the standard Heat-O-Meter mechanism for cycling the burner on



and off during the day in accordance with weather conditions; also a summer-winter switch.

Series QD3 units, designed for commercial stokers, are equipped with a built-in "hold-fire" control in addition to the features included in the QD2 series.

Heat-O-Meters are a type of "time cycle" heat control for regulating the operation of stokers, oil burners, etc., used to heat multiple occupancy buildings, where it is difficult or impossible to find a suitable location for a room thermostat.

97—Prismlac

Maas & Waldstein Company, 438 Riverside Avenue, Newark 4, New Jersey, announces a new lacquer enamel which air dries to prism-like formations. The new coating, named Prismlac, produces attractive crystallizations on glass, steel, aluminum, brass and copper. It can also be used on closed grain wood, such as birch and maple.

Prismlac is available in a variety of colors, including black, red, maroon, and green, and is also obtainable as a clear finish.

98—Weathertherm

Weatherall Engineers, Inc., 3 Friendship St., Providence 3, R. I., is announcing the Weathertherm direct fired heater for low-cost heating, minimum maintenance cost, uniform heat distribution, completely automatic, all-welded construction, seamless boiler tubing, and conservatively rated from 75,000 to 5,000,000 Btu output. The Weathertherm is adaptable to oil, gas or stoker firing. The heater is constructed of tubular steel; there are no heat traps, baffles or other surfaces to accumulate ashes or soot.

Round, diagonally placed air heating tubes are located directly over the fire. The diagonal tubes provide for air travel through confined hot tubes, where the air is heated to a high temperature and then mixed with cooler air volumes which circulate around the entire core. A permanently sealed breeching is enclosed in the air stream.

99—Vac Blower Attachment

General Blower Company, 8063 Ferris, Morton Grove, Ill., announces a new industrial vacuum cleaning unit consisting of a metal vacuum tank, a double hose connection, a filter bag and an agitating plunger. Power is provided by attaching one of the hose connections to the General insulation blowing machine using the blowing unit in "reverse," thus creating



an impelling or vac-ing action rather than a blowing or propelling action. By means of this new unit, known as the "General" Insulation Vac, the blowing mechanism can be made to perform a dual function, becoming a powerful vacuum cleaning device as well as an insulation blowing machine.

The new Vac unit picks up all sorts of loose material; nails, sand, gravel, plaster debris, shavings, sawdust, insulation waste, all kinds of litter and dirt.

100—Airborne Furnace

Iron Fireman Manufacturing Co., 3121 W. 106th St., Cleveland 11, or Box 450, Portland, Oregon, has designed a self-contained furnace unit (Airborne) with either oil firing or automatic coal firing. The Airborne unit heats, cleans, humidifies, and circulates the air.

Automatic control instruments are available and include room thermo-

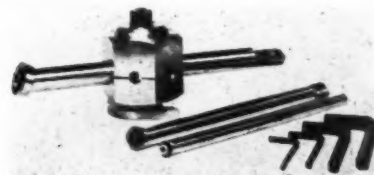


stat, synchrostat or time switch, limit controls to prevent overheating of flue or furnace, fan control and (in the coal model) an automatic refueling instrument to keep the fire banked ready for instant action.

101—Shearcutter

The Fearless Tool Company, 1234 S. Gramercy Place, Los Angeles 6, announces production of a new cutting tool—the Shearcutter boring, turning and facing tool, with a precision tool holder, for use on lathes, screw machines, drill presses and boring machines.

The feature of the tool is the circular cutter bit, fastened securely to the end of a specially designed holder. The penetration angle is such that a

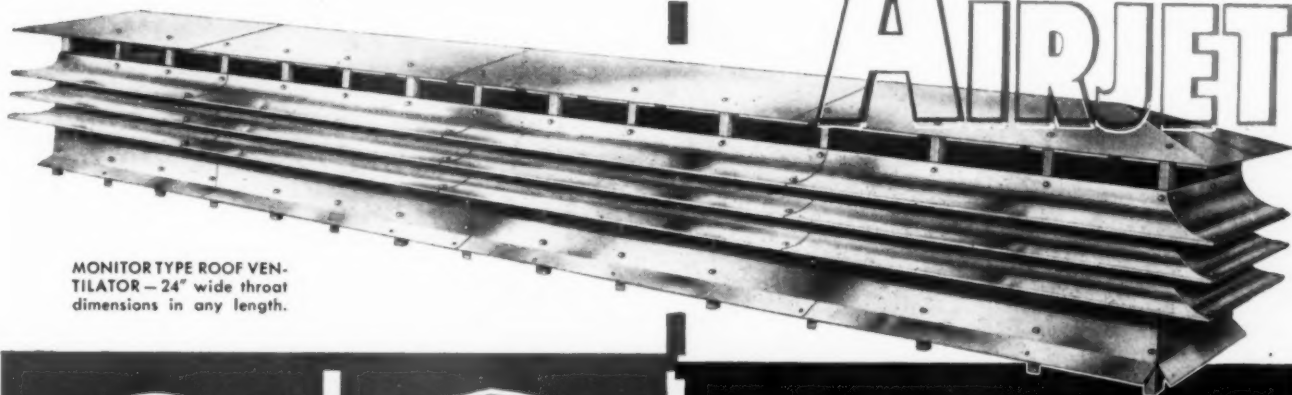


shearing action is attained and mirror-like finishes are produced.

These tools are marketed complete with three bit holders, six bits and a new toolmaker's precision boring tool holder.

Here's what the architects & engineers wanted

GET THESE FACTS BEFORE SPECIFYING!

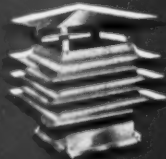


MONITOR TYPE ROOF VENTILATOR—24" wide throat dimensions in any length.

AIRJET



VENT FLUE CAP—Available in 4" and 6" diameters.

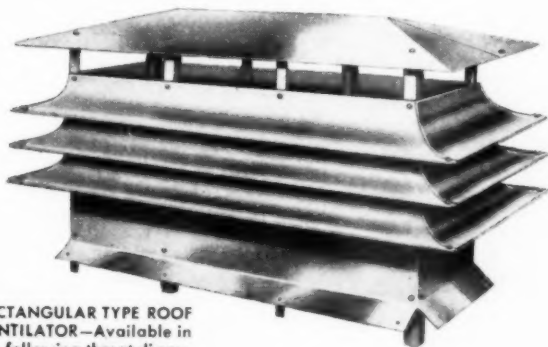


SQUARE TYPE ROOF VENTILATOR—Available in 12"

Roof Ventilators Vent Flue Caps

One of our first steps before designing AIRJETS was to ascertain preferences of Architects and Engineers regarding *natural draft ventilators*.

Here is what we found predominant throughout the profession:



RECTANGULAR TYPE ROOF VENTILATOR—Available in the following throat dimensions—12" x 24 $\frac{3}{4}$ ", 12" x 36 $\frac{3}{4}$ ", 12" x 48 $\frac{3}{4}$ ", 24" x 48 $\frac{3}{4}$ " and 24" x 72 $\frac{3}{4}$ "

SEND FOR COMPLETE INFORMATION

A few territories still available for Exclusive Franchise Dealers

C. R. GELERT COMPANY
35 North Raymond Avenue
Pasadena 1, California

Please send me your new catalog No. 446 on Airjet Roof Ventilators and Vent Flue Caps.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

HIGH EFFICIENCY WITHOUT DOWN-DRAFT

—so we designed AIRJETS to create a "jet of air" efficiently without down-drafts regardless of wind direction or turbulence caused by obstructions. Certified tests by California Institute of Technology guarantee this fact.

LOW SILHOUETTE

—so we designed AIRJETS to conform to modern day architecture—low, modern, streamlined. AIRJETS never exceed 22" in height. Transition bases are never needed. AIRJET vent flue caps work 12" from roof regardless of obstructions. Largest unit weighs only 29 pounds in aluminum.

MODERATE COST

—so we "machine-make" AIRJETS in VOLUME—THEY ARE THE LOWEST COST UNITS ON THE MARKET—Make us prove it. Certified tests prove they are the lowest cost per cubic foot of air moved. Comparative unit and installation costs prove AIRJETS most economical. AIRJETS eliminate insufficient ventilation by reason of costs!

THESE UNITS AVAILABLE IN ALUMINUM—NOW!
SOLD KNOCKED-DOWN AND PACKAGED!

MANUFACTURED BY

C.R. Gelert COMPANY

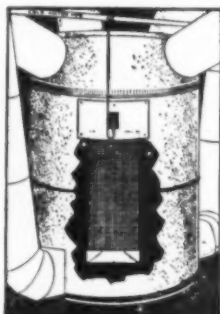
35 North Raymond Avenue, Pasadena 1, California

Equipment Developments

For your convenience in obtaining copies of New Literature use the coupon on page 110.

102.—Automatic Humidifier

Skilbeck Mfg. Company of Kenosha, Wis., has developed a humidifier which has sufficient evaporating capacity to maintain 35 to 40 per cent relative humidity with either high or low temperature furnaces.



The device is connected to the city water system for its water supply. It consists of a scale valve, an evaporating plate made of two sheets of absorbent material covered with wire cloth, and a trough attached to the bottom of the plate that holds about a pound of water.

103.—Dimpling Tool

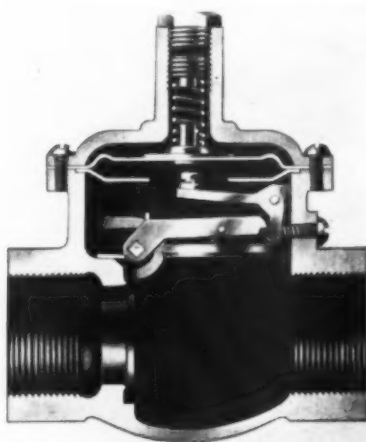
York Tool Sales Co., Aircraft Tool Division, York, Pa., offers pressure pad dimpling tools with holding



shanks $\frac{1}{4}$ -in. diameter by $\frac{1}{2}$ -in. long; spring clip or slotted shank at the manufacturer's option. With these tools, the flow of the material is in both directions, the upper radius is kept smaller and the hole size is better maintained (the skin around the dimple is not stretched or distorted, but remains flat).

△ 104.—Warden Valve

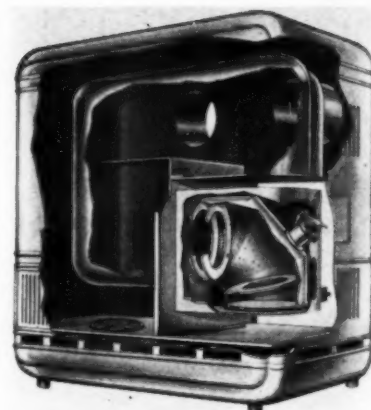
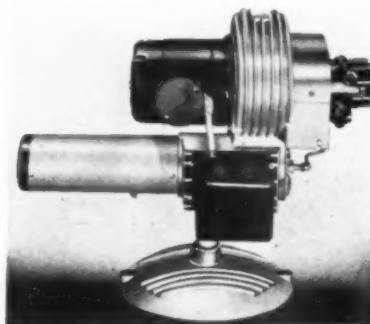
Security Valve Company, 410 San Fernando Rd., Los Angeles, offers the new Warden Valve which instantly shuts off the flow of any fluid when pressure drops below any predetermined level. This positive, automatic action protects against momentary pressure drops or ruptured pipe lines, to prevent fire, explosions



Each valve is manually set to close at a specified pressure which can be varied for each installation. When the fluid drops below this pressure, the spring-operated diaphragm drops down and trips the valve closing mechanism. The valve is manually reset by turning the valve control shaft in a counter-clockwise direction until it automatically latches in open position.

105.—Oil Burner

The HomeEase Products Division of Bogue Electric Company, 7000 Iowa Avenue, Paterson 3, N. J., announces a new oil burner. Model HE-1, firing $\frac{1}{4}$ to 3 gallons of oil per hour, is powered by a $\frac{1}{6}$ hp. specially designed, long hour duty, single phase alternating current motor with thermal overload protection.



● 106.—Home Heaters

Evans Products Co., 15310 Fullerton, Detroit 27, has developed a new horizontal burner for natural draft oil-burning home heaters which makes possible low-boy design of home heaters, permits lowering of the heat chamber for radiant heat at ankle-level height, provides a more efficient and longer flame tunnel, and permits placing the burner at the side of the heater for easier servicing.

The flame shoots out as in a gun-type burner and curves back around the baffle, toward the stack, thus increasing heat transfer. Scientifically located air apertures insure nearly complete hydroxylation of fuel oil.

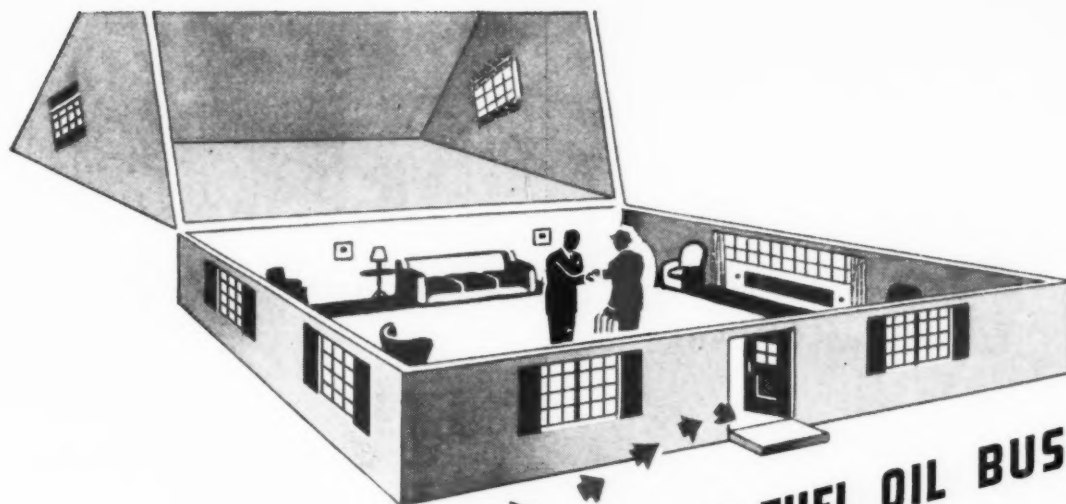
The horizontal burner is standard equipment in Evans Super-DeLuxe line of home heaters with the Teague low-boy console design, and are rated at 45,000, 55,000 and 75,000 Btu. They feature the Evans double-fan distributing 350 cfm of heated and humidified air at ankle-level height throughout a 180- deg. radius. Evans home heaters are distributed exclusively in the USA and Mexico by the Westinghouse Electric Supply Co., and its approved independent distributors and in Canada by the Canadian Fairbanks-Morse Co., Ltd.

● 107.—Clip Punch

Reiner & Campbell Co., Inc., 667 Norwood Terrace, Elizabeth 2, N. J., offers a new Clip punch. This tool is adaptable and very efficient in fasten-



ing slips or any other seams on duct work in connection with heating, ventilating and air conditioning. This punch will operate as quickly as any button punch and is easy to handle. It will push a half moon through three thicknesses of 18-gauge metal. There is no hammering or flattening out in connection with fastening the slips on to the duct.



YOU'RE ON THE "INSIDE" FOR MORE FUEL OIL BUSINESS... When You Sell FLUID HEAT PRODUCTS!

Sell a homeowner on installing a Fluid Heat Unit and you benefit two ways . . . 1. by making a profitable Fluid Heat sale; 2. by building a steady, lucrative fuel oil business.

Here's why Fluid Heat helps you make *more* sales . . . land *more* fuel oil contracts:

- ① The Fluid Heat line is really complete . . . enables you to satisfy customers, no matter what type burner they want. And with Fluid Heat's complete line you have the convenience of doing business with only one supplier. Furthermore, the Fluid Heat trademark has won solid consumer acceptance through dependable performance since the beginning of oil heating.
- ② Fluid Heat's engineering and construction is kept ahead of competition by an aggressive development laboratory . . . headed by engineers long experienced in the industry.
- ③ You sell the Fluid Heat line under a friendly Dealer Franchise, which is mutually profitable. And remember, our stake is in oil heating . . . we'll go all-out to help you compete with other types of heating.

There's no cost . . . no obligation . . . in investigating this profitable Fluid Heat Dealer Franchise. Write for full details. Fluid Heat Division, Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24, Md.

fluid heat PRODUCTS

"WORLD'S ECONOMY CHAMPION"

Manufactured by the Anchor Post Products, Inc., Baltimore, Md., Established 1892



4 Pressure Burners
Firing rates from
7/10 to 12
gallons per hour



6 Boiler Burner Units
Capacities from 475
to 840 sq. ft. of
standing hot water



7 Vertical Rotary Burners
Firing rates from
1/2 gallon to 6
gallons per hour



3 Air Conditioning Furnaces
From 120,000 to
200,000
BTU per hour

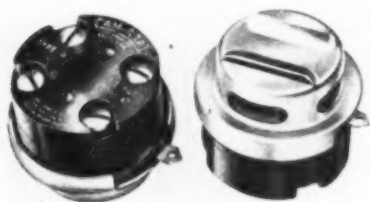
Equipment Developments

For your convenience in obtaining information regarding these items, use the coupon on page 110.

△108—Type A Cam-Stat

Cam-Stat, Inc., 2037 South La Cienega, Los Angeles, announces a small, compact thermostat for general application at 120-240 volts A.C., designed to meet the requirements of Underwriters' Laboratories.

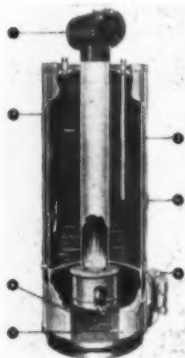
Type A Cam-Stat is only 1 9/16 in. in diameter and 1 7/32 in. in depth. Features include a high current carry-



ing capacity (1500 Volt-Amps) without the necessity of a condenser, low differentials (as low as 2 degrees F.), a wide selection of temperature ranges (from 50 to 350 degrees F.), resistance to vibration and switching arrangements of SPST break or make on temperature rise, SPDT and independent circuit double throw.

109—Water Heater

The J. L. Gillen Company, Dowagiac, Michigan, announces a new post-war model automatic oil-burning water heater, featuring an improved burning unit to consume less oil on pilot.



Features are: (1) An improved combination automatic draft regulator and six inch tee-pipe connection, including a door for both easy lighting and viewing flame; (2) five-inch flue; (3) full

corrugated asbestos insulation on sides and rock-wool on top; (4) snap-on plate for easy access to thermostat bulb; (5) water temperature adjustment disc; (6) improved burner support and base design; (7) plunger rod for easy burner cleaning.

Available in five capacities—20, 30, 40, 50 or 65 gallons. Height of the four smaller units is 51 inches, the 65 gallon is 61 inches. Outer casing is 20-gage steel, finished in aluminum-grey Hammerloid enamel.

△110—Aluminum Awnings

Kool-Vent Metal Awning Corp. of America, Keystone Building, 324 Fourth Ave., Pittsburgh, announces the Koolvent awning, constructed of

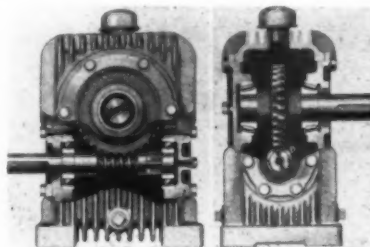


aluminum with aircraft type riveted construction, but lightweight and easy to handle, for residential, commercial and industrial applications, to reduce the load on summer air conditioning systems.

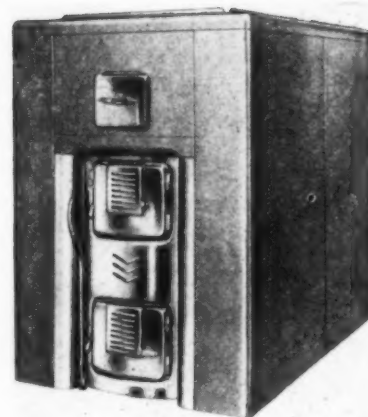
The Koolvent awning consists of a series of alternating, separated layers of aluminum strips with edges formed at right angles. Each alternating strip overlaps the strips immediately adjacent to it, with space provided between the overlaps for the free circulation of air and the admission of light.

111—Speed Reducers

Michigan Tool Company, 7171 E. McNichols Rd., Detroit 12, announces a complete standardized line of compact speed reducers, built around double enveloping Cone-Drive gearing (more teeth in contact and more contact per tooth of right angle reduction gearing).



The new standardized line includes models with pinion under, pinion over, and with gear shaft vertical. The center distances of from 2 to 24 in., cover a power-transmission range equivalent to 3 to 24 in. center distance in worm gearing. Horsepower ratings range up to 800 hp input to the pinion. In the smaller sizes, models light enough to be carried in one hand are designed for fractional horsepower work.



112—Postwar Furnace

Kalamazoo Stove and Furnace Company, 453 Rochester Ave., Kalamazoo 6, Michigan, is distributing first models of their postwar furnaces. The new Supersteel forced air furnace is made of "Torridsteel," a 7-gauge steel chosen for durability and resistance to corrosion, coupled with quick heat response. Eighty-eight per cent of the joints are leak-proof "submerged" welded.

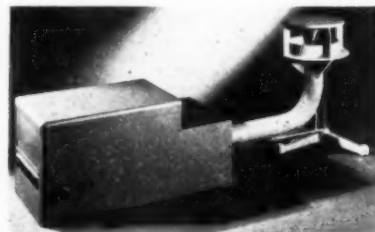
A new "Steel Ring" radiator makes smoke and gases travel farther; and the new furnace design has up to 21 per cent greater heating surface.

Other features include a "Triple-Clinch" collar where the drum joins the radiator; a heavy steel sleeve, cement and asbestos rope give triple protection here; one-piece giant steel drum combustion chamber, selective hot blast that saves fuel; huge all-fuel grate; non-leak welded-on front; and a new safety cleanout door.

△113—Conversion Burner

J. G. Gregory Company, Inc., 228 N. LaSalle St., Chicago 1, announces the Gregory gas conversion burner for converting domestic furnaces to use of gas.

Features are low blast spreader type burner, electrically welded,



heavy steel construction. The burner may be extended to accommodate all conventional sizes of domestic furnace firepots. Complete assembly can be made outside of the furnace. All control equipment is furnished and AGA approved.

Adjustments for primary and secondary air control are provided for outside of the burner in an attractive bronze finish housing.

Here's America's
GREATEST
heating market

**BUILDING SITE
FOR
10,000,000
NEW HOMES**

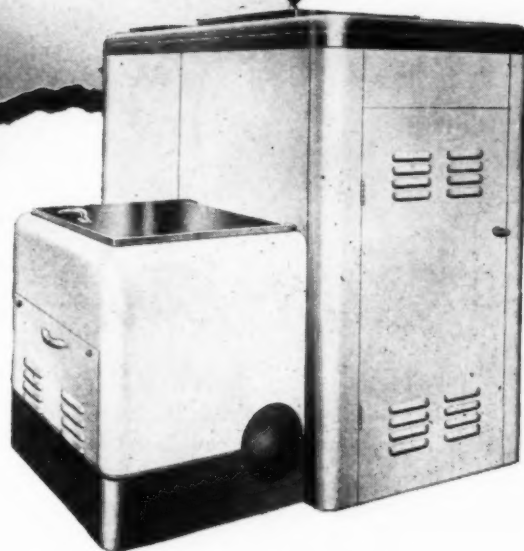


...and here's your chance to sell it with **HEATWAY**

Never before has the demand for home heating been so tremendous. And lucky for you, there's an easy way for you to move in on this big new home market with **HEATWAY**... Stoker-matic's beautiful new one-package stoker furnace that automatically heats, filters, humidifies, and blower-circulates clean warm air to every room. Look into Heatway's four-way winter air conditioning... its silent unit drive, its handsome streamlined appearance. You'll see why it's so popular in every Heatway Home. Write today for full information on franchised dealerships.

STOKERMATIC

570 LEXINGTON AVENUE, NEW YORK 22, N.Y.



Here are just a few Heatway features:

SILENT UNIT DRIVE

Only 3 moving parts, sealed in oil, guaranteed 3 years

DUST TIGHT HOPPER

Has slight internal pressure to prevent "smoke back"

BUILT IN CLINKER PAN

Keeps all smoke out of basement

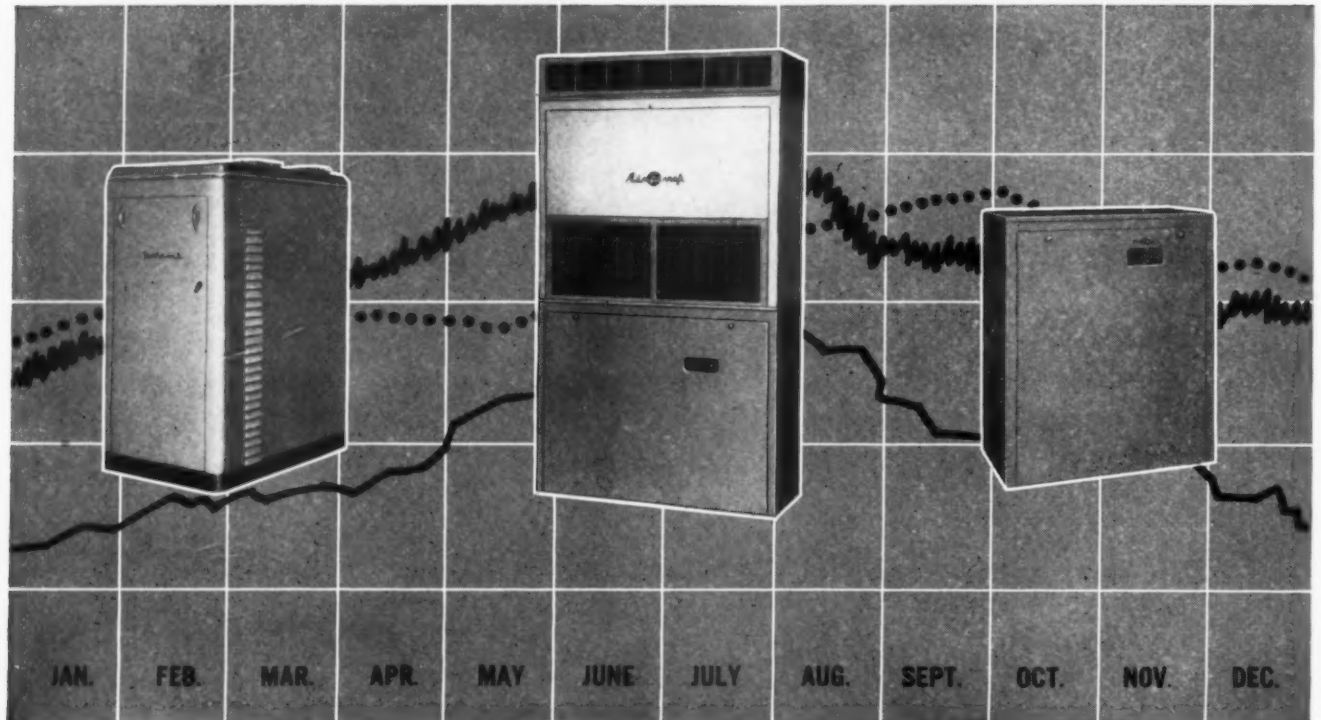
BALANCED BLOWER

Quiet, slow speed, with variable speed to meet all conditions.

SPUN GLASS FILTERS

Big, efficient, readily replaceable. Screen all impurities from circulating air.

CHRYSLER AIRTEMP



12 months of **STEADY** *Income!*

The complete Chrysler Airtemp line of Heating, Cooling and Refrigeration products covers every selling season—brings 12 months of *steady* income to dealers!

There is not just one sharp sales peak preceded and followed by months of high-overhead inactivity. Chrysler Airtemp dealers have a profitable operation the year around.

Chrysler Airtemp has planned it that way with its three outstanding lines of products—a complete line of automatic home heating for all types of fuel; plus the famous “Packaged” Air Conditioners; *plus* an outstanding line of condensing units and “Packaged” refrigeration

equipment for commercial and industrial refrigeration. Chrysler Airtemp products have widespread public acceptance created by nation-wide experience by users and national advertising.



1, 2, or all 3

Chrysler Airtemp dealer agreements are written for one, two or three of these advanced lines. It will pay you to look into the Chrysler Airtemp proposition. Write today for full information.

AIRTEMP DIVISION OF CHRYSLER CORPORATION
DAYTON 1, OHIO

In Canada: Therm-O-Rite Products Ltd., Toronto, Ontario



A I R C O O L I N G R E F R I G E R A T I O N
HEATING • COOLING • REFRIGERATION



TYPE FG VALVE

The Precision poppet valve construction provides increased gas flow and less pressure drop. Recommended in larger sizes where higher gas pressures prevail. Four "Standard" sizes... $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1" $1\frac{1}{4}$ ".



STANDARD ROOM THERMOSTAT CONTROL

Knurled wheel for adjusting indicator to temperature desired. Type 4M, 2-wire single contact, requires continuous current to hold control valve in open position. Break in circuit automatically closes valve.

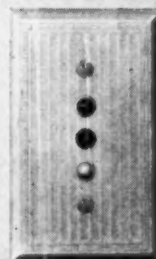


ELECTRICAL PILOT CONTROL

Operates with current failure valve and room thermostat to control current passing through failure valve. Current passes through valve so long as pilot is burning properly. Should pilot go out or burn too low, circuit automatically opens, closing valve. Can be supplied in either 100% Shut-off or Burner only.

STANDARD PUSH BUTTON SWITCHES

Plate shown for special adjustable switch back. "High," "Medium" and "Low" position. Contacts for lights are in valve itself and indicate positive position of valve.



STANDARD MAGNETIC THERMOSTAT TM VALVE

Operated by continuous 24-volt current passing through Valve Magnet and continuously holding valve open. In event of electricity failure, valve immediately closes, shutting gas off in furnace. Made in $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1" sizes.



STANDARD DOME CONTROL WITH LIMIT CONTACT SWITCH

Operates with 110V line to blower. Limit contact switch has contact points normally connected. Current passing through current-failure valve flows through limit switch, and in case of overheating causes contact switch to open, allowing gas valve to close.

FLOOR FURNACE VALVE

This is a 4 position Manually operated valve—Medium, High, Low and Off indicated on dial. Medium and Low positions adjustable. Pilot, Control and Burner Control operated with a single key



SAFETY
For ECONOMY Make Sure Your* Gas Controls are STANDARD
SERVICE



*L. P. G. BUTANE—NATURAL

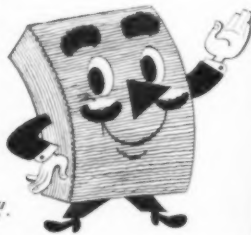


STANDARD REMOTE CONTROL VALVES, by consistent performance, dependability, durability, have become the accepted standard wherever gas is used. STANDARD REMOTE CONTROL VALVES are simple in design, sturdy in construction, compact, convenient to install, absolutely automatic in operation. They are engineered to exact A.G.A. and

National Board of Fire Underwriters requirements, and no consumer of gas for power, heat, or any processing purpose can afford to accept less than the established "Standard" of efficiency. Illustrated here, ready for immediate delivery, are seven of the most universally used types of Standard Remote Control Valves. Other types are available. Submit your blueprints and specifications for prompt estimates.

STANDARD REMOTE CONTROL VALVE COMPANY
205-211 PASADENA AVENUE • SOUTH PASADENA, CALIFORNIA
PIONEERS IN GAS CONTROL SINCE 1924

This applicator sold
130,000 sq. ft. of
KIMSUL* for single
new housing
project



KIMSUL comfort in these beautiful Bolling Square Apartments will produce future sales, too. For one KIMSUL installation sells others.

There's a bigger piece of the building business for you, too... when you add the sale and installation of KIMSUL to your activities. For highly efficient KIMSUL Insulation ("k" factor, 0.27) is especially designed to increase your volume and profit the easy way. It's a prefabricated, pre-cut blanket insulation that makes possible speedy, thorough installation *without trained help or special machines*. It comes compressed to 1/5th installed length and packaged

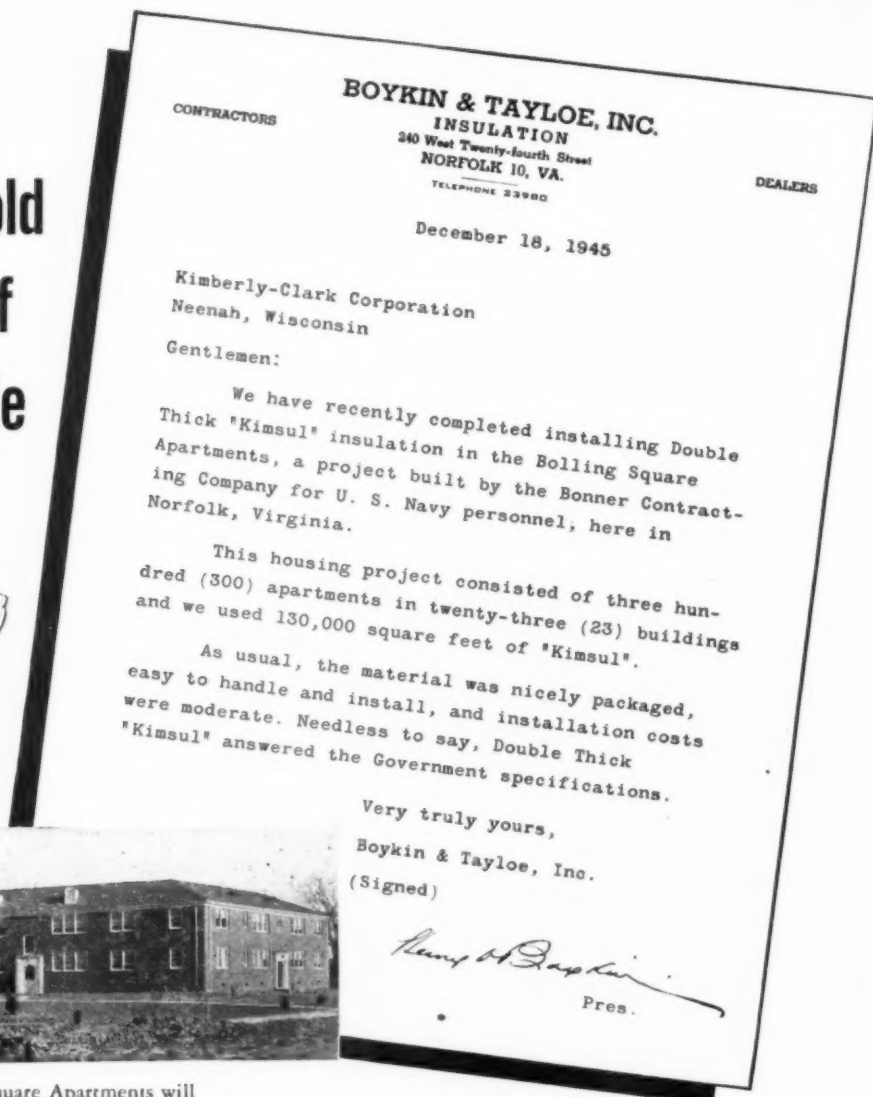
in handy, light rolls... reduces handling and storage to a minimum. And above all, nationally-advertised KIMSUL is a top-ranking, good-margin insulation that moves fast because it finds acceptance everywhere.

Learn how *many-layer* KIMSUL can increase business for you — in both the new-home and existing-home markets. Write today to Kimberly-Clark Corporation, KIMSUL Division, Neenah, Wisconsin.

↓
We are producing all the KIMSUL Insulation we possibly can, but due to the great demand, your distributor may have some difficulty in supplying you as promptly as usual.



*KIMSUL (trade mark) means Kimberly-Clark Insulation

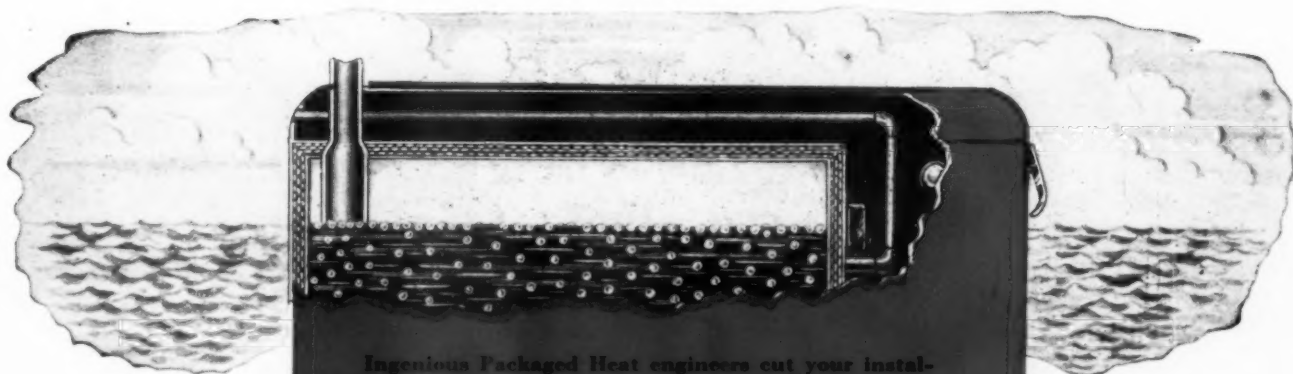


EXPANSION

TANK SAVER

SHRINKS

INSTALLATION COSTS



Ingenious Packaged Heat engineers cut your installation costs when they designed this "air-cushion" Tank Saver. In filling the boiler, air is trapped in the space shown. This provides a reservoir of air that takes care of the expansion and contraction of the water.

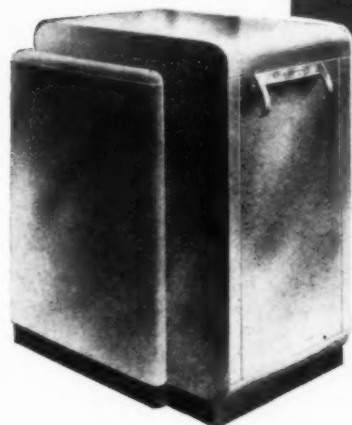
Just one of Packaged Heat's profit-protecting features PUTS \$20 IN YOUR POCKET EVERY TIME YOU INSTALL A UNIT! It's the ingeniously engineered Packaged Heat Tank Saver that eliminates all costs of the usual separate installation . . . because it's built right into the "package." It's a fact! . . . when you plug in a Packaged

Heat unit, you've also plugged in a year-round supply of hot water for your customer. That's a sales point as well as a profit-protector. You pay

no bills for separate tanks . . . suffer no "basement engineering" headaches. And—you save not only the cost of the tank but the cost of the piping, too.

The Packaged Heat Tank Saver is more efficient as well as more convenient. Shock absorption is quicker. The "tank" never becomes waterlogged . . . never requires bleeding. Operation is fully automatic and satisfactory in every way.

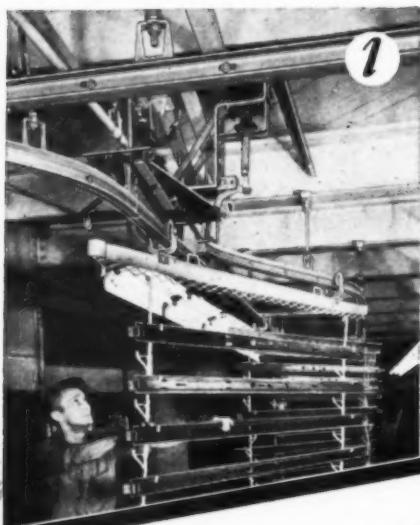
This Tank Saver is only one of the reasons that Packaged Heat offers the solution to rising installation costs. Throughout, Packaged Heat is designed for simplest possible installation . . . you just "pick it up . . . set it down . . . and plug it in." Build your future sales policies around Packaged Heat!



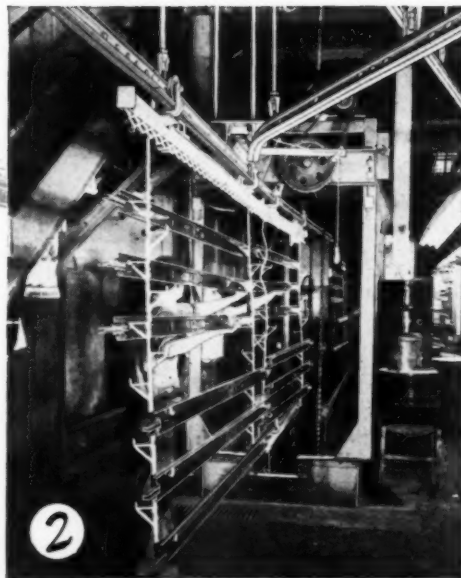
Oil or gas fired Packaged Heat units are manufactured in all capacities suitable for home heating.



PENN BOILER and BURNER MANUFACTURING CORP.
LANCASTER, PENNSYLVANIA



AMERICAN MONORAIL *System* Uses Power for SPOT Handling



Extreme flexibility of movement is carefully maintained in this hand operated American MonoRail System. Where quick change of trolley travel or passage of carrier through process is required, power driven equipment takes care of such spots as . . .

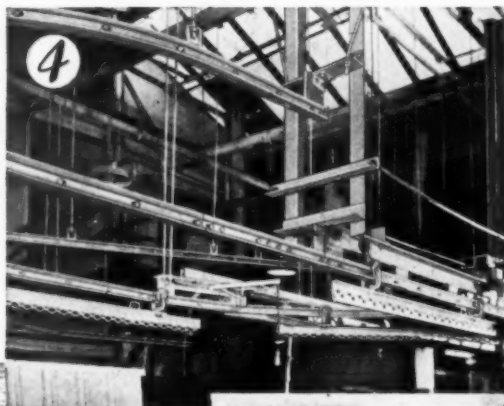
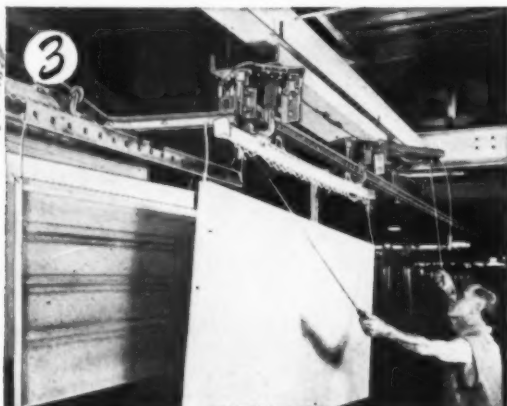
1. Trolleys on parallel tracks automatically brought into single track alignment by solenoid operated switch.
2. Carriers roll on track sections for vertical passage through degreasing tank. Cleaned

parts move down the line to spray booths.

3. Crosstrack switches provide 90° transfer to shipping area as carriers roll off power conveyor in finishing oven.

4. Empty carriers raised to high level track for gravity return to loading station.

American MonoRail Engineers, with their wide experience in solving difficult handling problems, will gladly consult with you. Send for Bulletin C-1 illustrating hundreds of similar operations.



THE AMERICAN **MONORAIL** COMPANY

13133 ATHENS AVENUE • CLEVELAND 7, OHIO



PROVED!

MORE HEAT...

LESS COST

Yes! . . . Proved repeatedly for four years in thousands of homes all over America! . . . Proved to give the *most even heat* at the *lowest cost*!

These Norge-Heat advantages, along with exceptional dependability, are the result of progressive engineering, aided by management in harmony with dealers' problems—management which continually seeks to produce perfect merchandising methods as well as perfect merchandise.

THE COMPLETE LINE FOR MORE PROFITS FOR MORE DEALERS

Every unit in this complete line has the double backing of two great names! NORGE and BORG-WARNER combine their experience, facilities and reputations to offer unusual advantages to the established heating dealer.

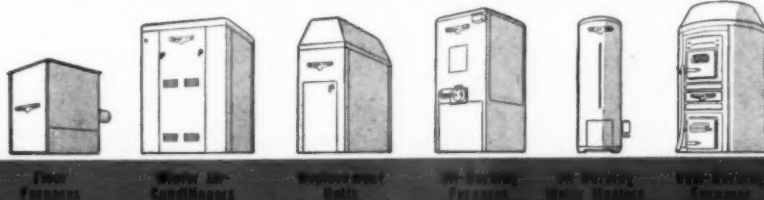
NORGE-HEAT'S SENSATIONAL NEW OIL-BURNING WINTER AIR-CONDITIONING FURNACE A Model for Every Home—New or Old

The revolutionary economy, even heat and dependability stem from the perfect coordination of these many improvements: 1) *A more stable fire* because the air is *pulled* through the combustion chamber, and not pushed through, as of old. 2) *Instant response to the thermostat*, guaranteed by stainless-steel refractory and single-motor operation. 3) *Automatically controlled uniform mixture*, due to the patented "Whirlator" combustion head. 4) *More even heat*—partly the result of the horizontal fire tunnel with 17-foot flue ramp and the inverted flue outlet which retains heat on the off-cycle. 5) *Reduced installation costs* because the new design makes possible complete assembly in a very few minutes. 6) *Lower service costs*, assured by centralized visible servicing and centralized lubrication, combined with the finest materials and workmanship. 7) Plus, of course, *the sensational vacuum-draft*, exclusive to Norge-Heat in the domestic field. So that you may know the finest in furnaces, we invite your investigation.



Norge Heat

Division of Borg-Warner Corporation • 574 East Woodbridge Ave., Detroit 26





at winning better satisfied customers for you!

This operator earns his salary at PENN . . . creating better satisfied customers for you. For he, like every other PENN expert in Quality Control and inspection, is determined to give you *the best automatic heating controls that can be built.*

With that aim in mind, this PENN expert is extremely vigilant and careful to see that the PENN Controls he handles measure up to the highest standards. Here he is using a Dial Indicator Gauge. In meeting rigid specifications,

he adjusts exactly the travel of the actuating pin which opens and closes the contacts in a PENN Magneseal switch used in PENN Controls.

Be sure to give your customers the extra value of PENN Controls. *They cost no more . . .* and PENN's complete line provides a control for every type of heating job . . . every type of heating system. Ask your jobber about them. *Penn Electric Switch Co., Goshen, Ind. Export Division: 13 E. 40th St., New York 16, U.S.A. In Canada: Penn Controls, Ltd., Toronto, Ontario.*

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS



THE *Best* IS EASIER TO SELL...

Since 1890, the quality and fast selling features of VICTOR furnaces have been acknowledged by everyone in the industry. Victor dealers, are satisfied dealers, proud of the line they sell. Victor owners are satisfied owners, enjoying the finest in heating equipment. The best IS easier to sell... and that means more sales per season.

• SELL THE COMPLETE **VICTOR**
Line

The Furnace with Heat Radiating **FINS**

50 Years of Experience • Quality • Satisfaction

HALL-NEAL FURNACE Co.

VICTOR Quality Furnaces Since 1890

1326 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA

For the record, Petro makes this . . .

STATEMENT

TO THE HEATING TRADE

PETRO REFUSES ANY PART of the dangerous practice of shipping oil burners with parts missing and requiring the installer to complete the burner in the field with materials from black market, second-hand or other non-responsible sources.

Such a practice is short-sighted, fraudulent, and sure to create costly servicing for the trade, extravagant heating costs for the public, and general ill-will.

Today's demand for Petro is over six times greater than ever before, while shortages in bona-fide standard materials and parts are seriously restricting our current production.

BUT, every Petro that IS shipped is 100% Petro, complete, fully tested and qualified to carry its own and the Underwriters' labels. No Petro production standards are short-cut—no operation is skimped—no sub-standard parts are tolerated—no heating contractor is given a future headache under a trusted label.

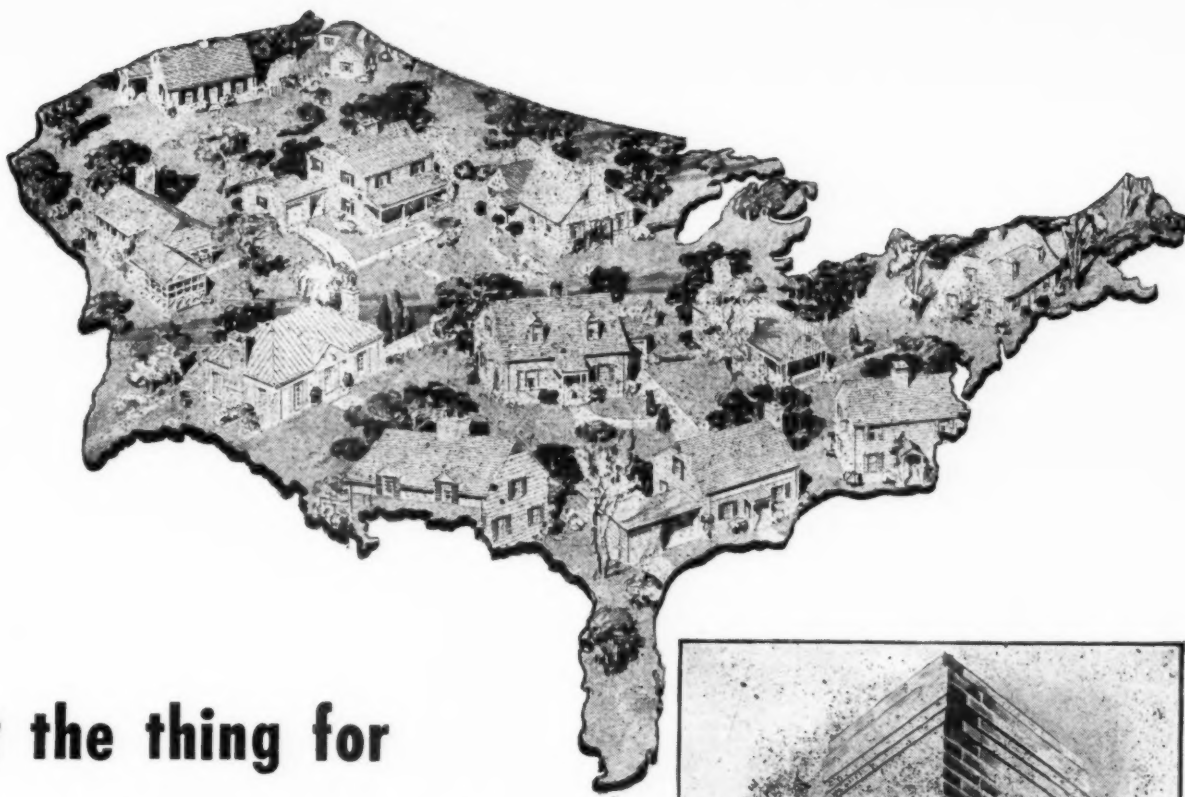
Petro shares with heating contractors their own pride in their local reputation for craftsmanship and quality. This statement is issued to assure the heating trade that every Petro which it receives will protect the contractors' and our own reputation for first quality, long life and economical, satisfactory heating service.

PETROLEUM HEAT AND POWER COMPANY • STAMFORD, CONNECTICUT

PETRO FUEL OIL BULK PLANTS, DISTRIBUTION TERMINALS AND FACILITIES IN: BOSTON • PROVIDENCE • STAMFORD
MT. VERNON • NEW YORK • LONG ISLAND • NEWARK • PHILADELPHIA • BALTIMORE • WASHINGTON • CHICAGO

PETRO
REG. U. S. PAT. OFF.

MAKERS OF GOOD OIL BURNING EQUIPMENT
SINCE 1903



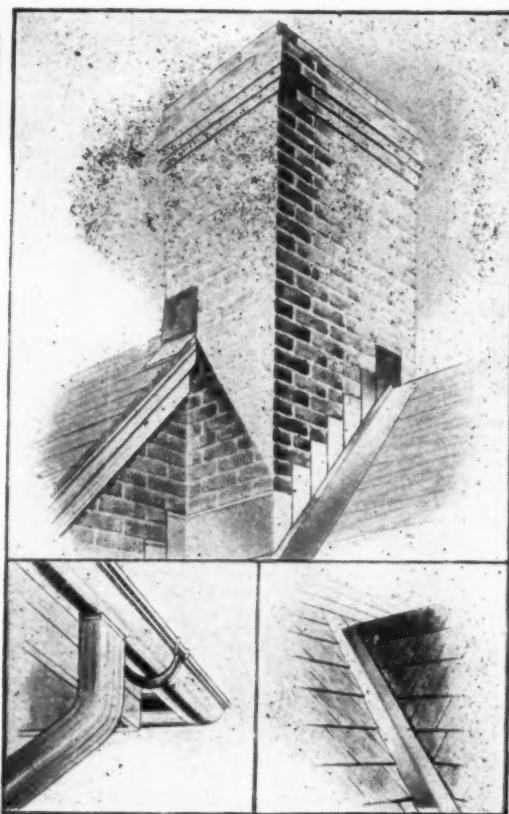
Just the thing for Today's Small Homes... ***COPPER FLASHING***

WITH SMALL HOME BUILDING due for a tremendous boom, take advantage of the great opportunity afforded by *copper*. Even the smallest home should have this durable, non-rust metal for chimney flashing. And at other vulnerable points, you know that copper will prove cheaper in the long run.

Ridges, valleys, gutters, downspouts . . . all will provide long, economical, rust-free service if made of copper.

And all sheet metal craftsmen like to work with copper . . . It bends readily, is easily formed and soldered.

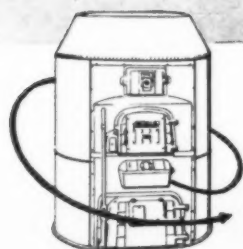
For lasting protection on small homes, use copper . . . the metal that satisfies owners, and builds good will for you.



Anaconda
SHEET COPPER

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.,
New Toronto, Ont.



Inside Story of THE KENWOOD WARM AIR FURNACE

... tells why it's easy to sell
this popular-priced **SUNBEAM** unit



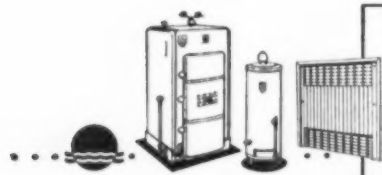
IN the KENWOOD, the emphasis is on performance. It's what it does that counts.

Every detail of the internal construction of this basic SUNBEAM gravity furnace is designed to supply an abundance of warm air heat ... with highest efficiency and maximum economy. Some of its more important selling features are shown here.

- 1 Upper Front—Slips in place over and around feed section. Prevents gas leakage.
- 2 One-piece Cast Iron Radiator—Generous capacity, with maximum air circulation space.
- 3 Smoke Collar—Cast with radiator, extends outside of casing. Radiator revolves for convenient connection.
- 4 Lower Front—Slips in place over and around ash pit section. Keeps out dust.
- 5 Two-piece Fire-Pot—Made of sturdy cast iron with extra deep cup joints. Extra durable.
- 6 Vapor Pan—Large capacity, located to provide maximum moisture.
- 7 Duplex Grate—Unusually large free area. Upright shaker revolves outer ring on 4 wheels.
- 8 Ash Pit—High and spacious. Full width permits easy ash removal.

THE many advantages of this moderately priced warm air furnace, plus the tremendous public acceptance of the widely advertised American-Standard and SUNBEAM names, are all you need to attract thrifty buyers.

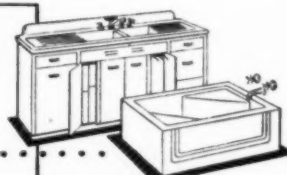
Furthermore, a convenient Time Payment Plan helps clinch modernization jobs. Contact your Wholesale Distributor for complete details. **American Radiator & Standard Sanitary Corporation**, P. O. Box 1226, Pittsburgh 30, Penna.



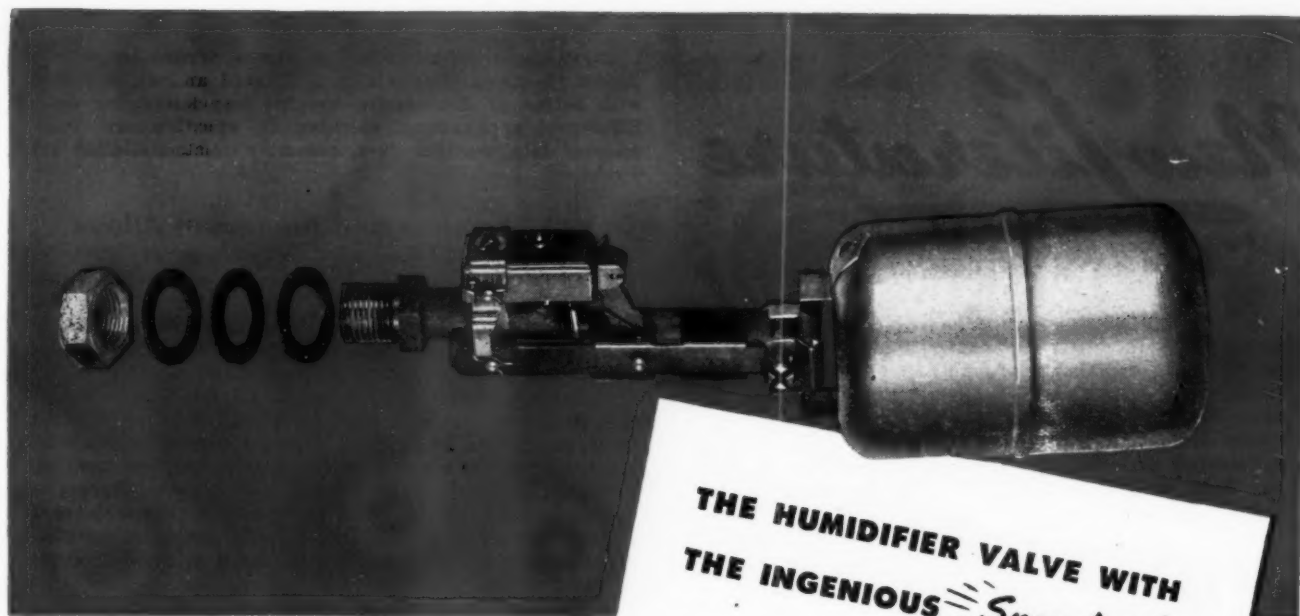
AMERICAN-Standard

HEATING PLUMBING

Serving the Nation's Health and Comfort



LOOK FOR THIS MARK OF MERIT—It identifies the world's largest line of Heating and Plumbing Products for every use ... including Boilers, Warm Air Furnaces, Winter Air Conditioners, Water Heaters, for all fuels ... Radiators, Convectors, Enclosures ... Gas and Oil Burners ... Heating Accessories ... Bathtubs, Water Closets, Lavatories, Kitchen Sinks, Laundry Trays, Brass Trim ... and specialized products for Hospitals, Hotels, Schools, Ships, and Railroads



THE HUMIDIFIER VALVE WITH
THE INGENIOUS *Snap Action*

A better valve that is being made still better—

We realized that we were biting off a big chew when we started to make humidifier float valves. But, frankly, we didn't know how tough it was to be until we got all the way into it.

As you know, the conventional float valve just couldn't do this vital job right. Plainly, a valve was needed that could (1) cope with the foreign matter, lime and scale that are always present in humidifier pans, (2) seat tight against water pressures up to 150 lbs., (3) have provision for water level adjustment on the job.

To accomplish these things, we designed a snap action valve—a valve that snaps wide open when the float drops $\frac{1}{4}$ -inch, opening up a full stream which flushes out the valve and seat; then closes with the same snap when the water level is restored, seating tight against water pressures up to 150 lbs. The adjustable water level was provided too, and many other refinements that reflect unparalleled experience in the manufacture of water level controls.

The result was a far better valve, but, as we said at the start, there was still room for improvement. We first added a strainer, then changed valve details and float construction. During the war thousands were given severe work-outs in special applications that showed the way to further improvement. Soon this valve will again be available to you—a better valve, and, equally important, a valve that is being made ever better!

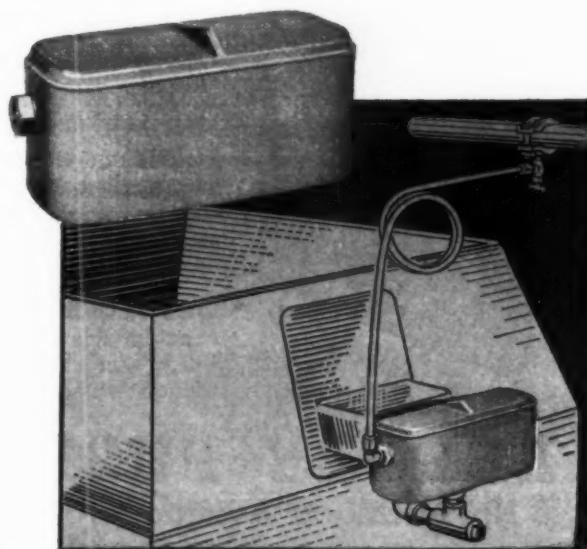
THE McDONNELL No. 417

Snap Action Valve is illustrated above. The No. 517, consisting of the No. 417 Valve installed in a die cast float chamber with cover, is shown below. Valves are adaptable to every type of warm air furnace.

McDONNELL & MILLER, Inc.
1318 Wrigley Building, Chicago 11, Illinois

Doing One Thing Well
REG. U. S. PAT. OFF.

McDONNELL
Snap Action
FLOAT VALVE



New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 110.

189—Southern Breeze Gas

Barnes Manufacturing Co., 6820 Pennsylvania Ave., Cleveland 3, is distributing a six-page envelope stuffer entitled "Clean Living with the Southern Breeze Gas Conversion Burner," with space for dealer imprint. The Southern Breeze is certified by the AGA, and uses natural, manufactured or mixed gases, in round or square furnaces. Southern Breeze has a rated input of from 75,000 to 325,000 Btu per hour.

190—Valve Catalogs

Henry Valve Company, 3260 West Grand Avenue, Chicago 51, has recently published two new catalogs illustrating and describing their line of ammonia valves and steel fittings.

Catalog 65 contains detailed data, prices, and dimensions of Henry ammonia shut-off, hand expansion, purge, relief, and check valves, packed liquid gauge sets, and accessories for ammonia refrigeration and other industrial purposes. Catalog 67 describes Henry drop forged and cold rolled steel fittings.

191—Ventilators and Vent Flue Caps

C. R. Gelert Company, 35 North Raymond Ave., Pasadena 1, Calif., is distributing a 16-page catalog entitled "Airjet Roof Ventilators and Vent Flue Caps"—Catalogue 446.

Suggestions on how to buy good roof ventilation accompanies the text. The Airjet is illustrated and described with tables of dimensions, weights and packaging data. Efficiency, applications, calculations, specifications, engineering data, weather data, assembly and installation are discussed.

192—Selector and Aluminum Alloys

Reynolds Metals Company, Department 47, 2500 So. Third Street, Louisville 1, Ky., offers a mass of technical information concerning 18 of the most widely used aluminum alloys, presented in easy-to-use form in Reynolds Aluminum Alloy Selector—a slide-rule type of chart in standard 8½ x 11-inch size. Price \$1.00 each.

Aluminum alloys covered include 2S, 3S, 14S, 17S, 18S, 24S, Pureclad 24S, 25S, 32S, A51S, 52S, R353, 56S, R361, R301, R303, Clad R303, R317. Thus by setting one slide for the alloy and the other slide for the product, the user has available in handy form data on mechanical properties, chemical composition, physical constants, thermal treatments and specifications. This greatly simplifies selection of the desired alloy and temper for a particular application.

In addition, the chart includes an explanation of alloy and temper designations as well as a brief description of outstanding properties of each of the 18 different alloys.

193—Die-Less Duplicating

O'Neil-Irwin Mfg. Co., Minneapolis 15, offers a new edition of the Di-Acro catalog No. 46-10 entitled "Die-Less Duplicating." The booklet summarizes the developments made in Die-Less Duplicating during the war and, the improved Di-Acro precision machines are illustrated.

Two Di-Acro benders are teamed up in the story on page 12 for production competitive to costly power operated equipment. The company makes benders, brakes and shears.

Now Only \$2.00 for This Outstanding Book on Air Conditioning



The Third Edition of

AIR CONDITIONING FOR COMFORT

by SAMUEL R. LEWIS

288 Pages—6½"x9¼"—Cloth Bound

Easy to understand . . . accurate . . . comprehensive . . . these are the features of this third edition of Samuel R. Lewis' well-known AIR CONDITIONING FOR COMFORT.

Fundamentals are fully and clearly covered. Correct procedure in designing complete systems for both residences and large buildings is explained step by step. In addition, considerable original data on such subjects as standards, noise control, measurements, and fire protection codes has been included.

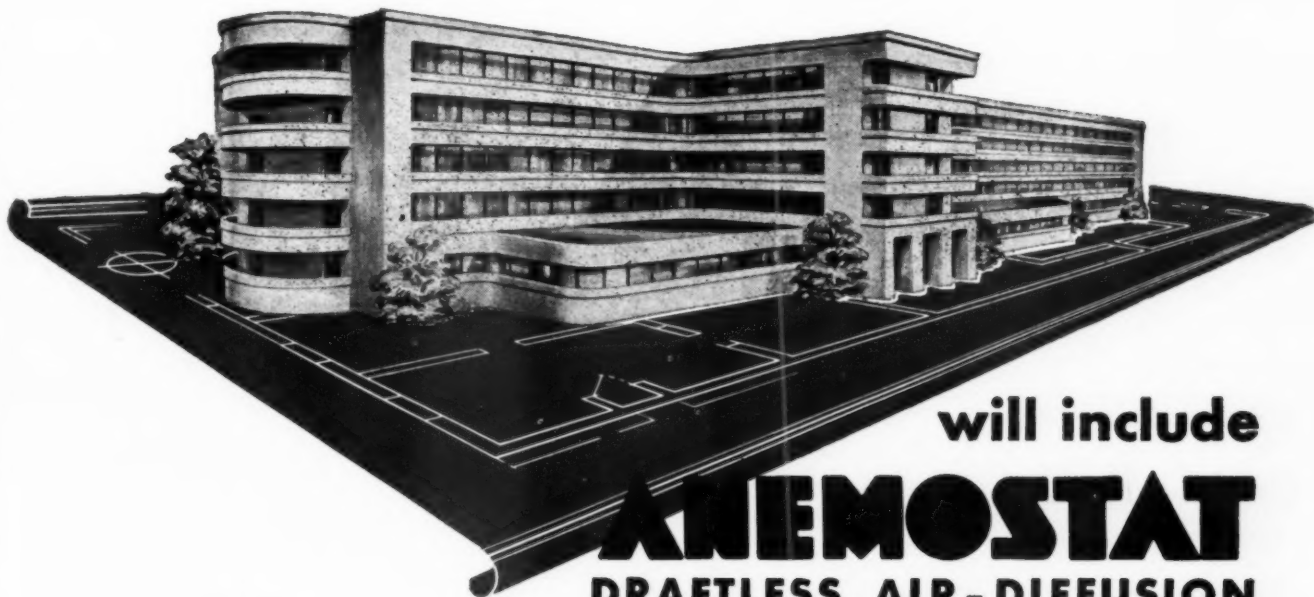
Send \$2.00 for a copy today to the address below. We know you will consider this one of the finest air conditioning books you have yet seen, but if you should be dissatisfied with it for any reason whatever, your money will be promptly returned to you.

KEENEY PUBLISHING COMPANY

6 No. Michigan Avenue

Chicago 2, Illinois

The Best Laid Plans...



will include

ANEMOSTAT DRAFTLESS AIR-DIFFUSION for successful air-conditioning



On the boards today, the ultra-modern commercial and industrial buildings of

tomorrow are being designed to assure unsurpassed production. Incorporating all the newest advances in architectural design, they will add much to worker efficiency and comfort.

The best laid plans for newly designed commercial and industrial buildings include successful air-conditioning. To get it, more and more architects, engineers, and contractors are specifying Anemostat—the patented air-diffuser—which completes the air-conditioning process by providing scientifically correct distribution of the conditioned air to every part of the conditioned rooms.

The extreme changes proposed in building and

structural design, the new ideas for interiors and equipment, all magnify the need for correctly engineered air-distribution as provided by Anemostat. Without it, the air-conditioning system is incomplete—drafts occur . . . stale air-pockets persist . . . temperature and humidity are unequalized.

The Anemostat eliminates these trouble-breeders by distributing conditioned air in pre-determined patterns, and precisely in accordance with prescribed-for-comfort air velocities. The result: **SUCCESSFUL** air-conditioning for true air-comfort!

Anemostat engineers are air-diffusion specialists. Backed by 25 years of experience, they can capably solve difficult air-diffusion problems. A consultation can be arranged today. There is no obligation.

Descriptive literature is available on request.

AC-1092

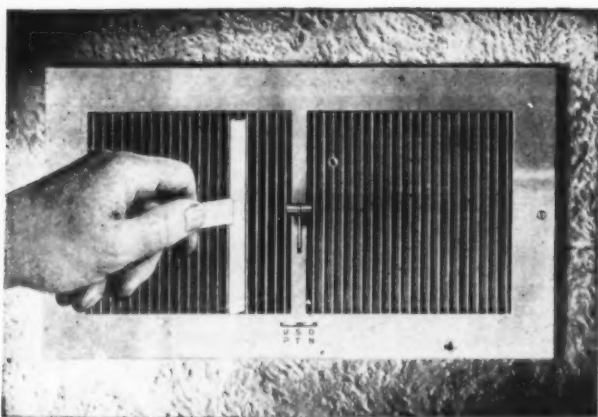
"No air-conditioning system is better than its air-distribution"

ANEMOSTAT

REG. U. S. PAT. OFF.

ANEMOSTAT CORPORATION OF AMERICA
10 East 39th Street, New York 16, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

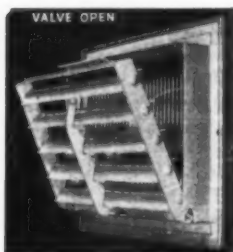


H&C No. 75 DESIGN

30% LESS RESISTANCE

Tests by authoritative and impartial sources disclose that 30% less resistance is encountered with No. 75 Registers employing the H&C TURNING BLADE VALVE, than with any other A.C. Register. Better air distribution is thus secured for your customers' satisfaction and in some cases smaller, consequently less expensive registers may be used.

At present, we regret to say, demand for these and other registers is considerably greater than our ability to supply them promptly. It will pay you, however, to bear in mind the decided superiority of this register against the time when No. 75 Design Registers are again readily available.



Turning Blade Valve

If you do not have a copy of our New No. 46 Catalog showing our condensed, streamlined post-war line of registers and furnace accessories, ask your jobber for one or write us.



HART & COOLEY MANUFACTURING CO.
World's Largest Manufacturers of
Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN

In Canada: Hart & Cooley Mfg. Co., Fort Erie, N. Ontario

New Literature

For your convenience in obtaining information regarding these items, use the coupon on page 110.

194—Moduflow Book

Minneapolis-Honeywell Regulator Co., Minneapolis 8, has just published a new consumer booklet describing the company's "Moduflow" automatic heating control system.

Titled "Comfort Unlimited," the book follows an earlier publication on the subject which ran to 11 printings for a total of 750,430 issues.

In addition to describing the application of Moduflow to the more conventional methods of heating—steam, warm air and hot water—"Comfort Unlimited" also discusses its application to zone control, radiant panel heating, solar heating, electric heating and air conditioning.

195—Answer Book on Home Heating

The Air Conditioning Department, General Electric Company, Bloomfield, N. J., offers "The Answer Book on Home Heating"—28 pages 11 x 8½ in.

The answer book represents a sincere effort to present to the home owner, the artisan, the tradesman an interesting and informative picture of what actually goes on in the processes of effective heating and true air conditioning. It puts in plain language the science of home heating and true air conditioning, and in that same plain language emphasizes the fact that air conditioning is a science.

The Answer Book covers heating, air conditioning, and summertime cooling.

H&C DAMPER REGULATOR SETS



ECONOMY TYPE. For use with splitter or regular dampers on either round or square duct. Snap Bearing permits small dampers to be installed without bending. Handle rotates in complete circle, permitting installation in any position. Handle always indicates position of damper. (Patent 2,146,142.) Wing Nut holds damper securely in any position. Individually packaged.

LIST PRICE.....No. 40¼.....\$0.30



BRACKET TYPE Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on ¼" size. Solid Bearing on ¾" size. Each set individually packaged. Rust-proofed.

LIST PRICES.....No. 50¼.....\$0.40
No. 50¾.....\$0.60



DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on ¼" size. Solid Bearing on ¾" size. All parts are rust-proofed. Complete set in carton.

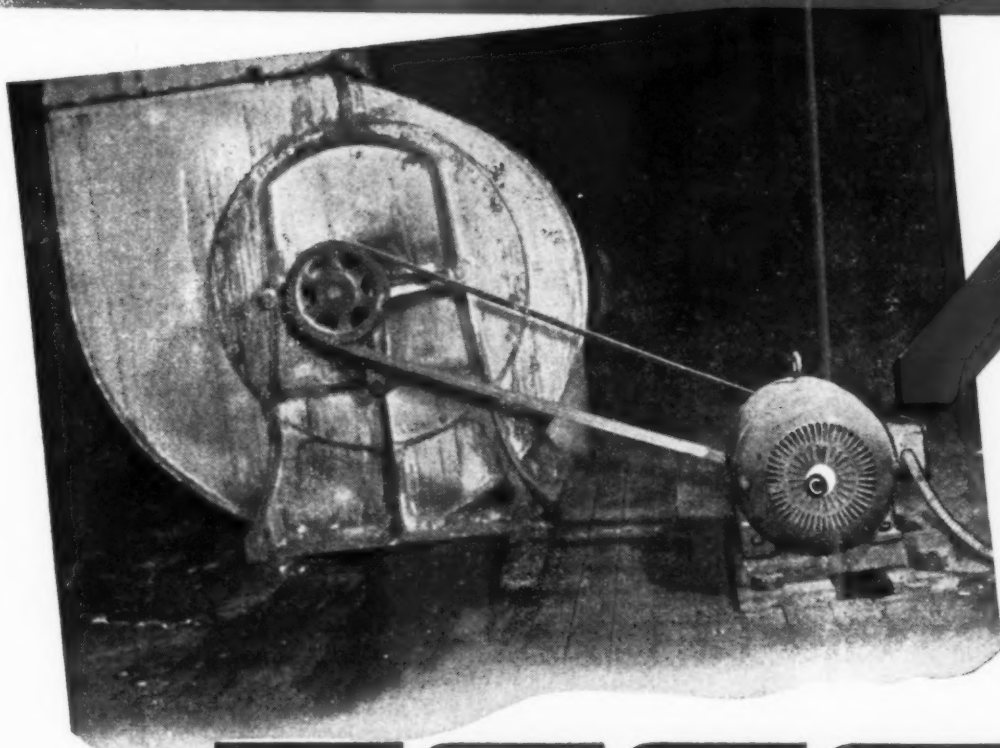
LIST PRICES.....No. 80¼.....\$0.40
No. 80¾.....\$0.60

See your jobber or write for literature and sample.

HART & COOLEY MANUFACTURING CO.
HOLLAND, MICH. • PHILADELPHIA OFFICE: 1600 ARCH ST.

Keep Your Equipment Operating

IN HAZARDOUS ATMOSPHERES with



Century TEFC motor operating a blower that carries acid fumes away from treating tanks used for chemical finishing and treating of metal parts.

CENTURY **TEFC** MOTORS

(TOTALLY ENCLOSED FAN COOLED)

Motor life is increased, production interruption is minimized when Century TEFC motors are used in atmospheres charged with acid fumes, dusts, mists, fogs, abrasives or any other non-explosive hazard. Shutdowns for motor repairs are reduced because the windings, bearings and other vital parts are sealed from the outside atmosphere by a completely enclosed inner frame.

A large fan forces a blast of cooling air between the inner and outer frames — carries away heat and keeps the motor frame clean.

In hazardous, but non-explosive atmospheres, use Century TEFC motors. These motors are also available in explosion proof types, carrying Underwriters' label.

Specify Century motors on all your electrically powered equipment. Engineered to the functional characteristics of the machines they drive to assure top performance—Century motors are a vital factor in producing a better product at a lower cost.

Century motors are built in sizes 1/20 to 400 horsepower.



CENTURY ELECTRIC COMPANY • 1806 Pine Street, St. Louis 3, Missouri
Offices and Stock Points in Principal Cities

New Literature

For your convenience in obtaining copies of New Literature use the coupon on this page.

196—Rod Selector Chart

Eutectic Welding Alloys Corporation, 40 Worth Street, New York 13, New York, offers a new Rod Selector Chart, 18 x 23 in. This chart, in addition to listing the company's products and their suggested applications, contains much factual information. The bonding and remelting temperature is given for each alloy as well as the Brinell hardness. Another column features the strength in psi. of these low temperature welding alloys.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

96	97	98	99	100	101
102	103	104	105	106	107
108	109	110	111	112	113
189	190	191	192	193	194
195	196	197	198	199	

Name
Company
Address
Are you Manufacturer—Jobber—Dealer—

197—Gilbarco Burner

Gilbert & Barker Manufacturing Company, West Sorubgfield, Mass., is distributing literature illustrating the Gilbarco oil burner with the new economy clutch, both models GC1 and GCS. Both models have been approved by Underwriters' Laboratories, Inc., and capacities vary from 0.75 minimum to 3.5 gph maximum. There is also a folder with space for dealer imprint covering Models GCS, GC1, GC2, GC3, GC4 and GC5, and a stack temperature chart showing relationship between depth of soot and stack temperature.

198—Crise Control Display

The Crise Mfg. Co., Columbus 16, Ohio, manufacturing electrical temperature controls, offers the Crise control demonstrator as an important selling aid for the dealer, to be used as a counter or window display or at the customer's home. Controls are mounted on a panel, carefully wired, and as the thermostat lever is moved, the motor starts opening and closing draft and check doors. The demonstrator is in three colors, sturdily built, with control units securely bolted to panel, and is offered free—dealer paying only for control, based on his quantity list price.

A two-page catalog sheet illustrates and describes the control, diagrams an installation and lists sales help.

199—Rotogravure Paper

Williams Oil-O-Matic Division, Eureka Williams Corporation, Bloomington, offers a reprint of a paper presented to the Group Session on Marketing before the American Petroleum Institute. This booklet is a formal statement on fueloil availability. It offers in concrete, easily-readable from the actual facts on the abundance of oil available.

This booklet also presents the case of the oil heating industry, which is facing the future with supreme confidence and has geared itself to this abundance of oil Available on request.

NEW

SKUTTLE

Automatic Humidifier

SERIES 500

Large Inspection Door and frame →
may be mounted at any location on the furnace bonnet.

Adjustable Collar will fit either sloping or vertical bonnets.

Water Tank and valve assembly →
are constructed of pure brass and copper.

Drawn Steel Pan construction ↑
is entirely without welding, eliminating possibility of cracking or breaking.

↑
For Greater Humidity, use the No. 590 Vapoglas plates with the series 500 Humidifier.

↑
Rear support is adjustable for leveling purposes.
Length of pan sizes are 12", 16", 20", 24", and 28".

517 E. LARNED

DETROIT 26, MICH.

Get your share of...

BIG PROFITS WITH J & C POWER HEATERS



Big business earns big profits. J & C Power Heaters give you an entry into the big heating field, because they are built in sizes up to 2,800,000 BTU output. That means big business, big profits for you when you handle the complete J & C line.

You've an efficient, sturdy J & C Power Heater for heating any big building in your community—church, school, garage, store building, warehouse, apartment dwelling, or factory. J & C Power Heaters do an economical job of heavy-duty heating, for they are built with a 90% direct radiation surface which captures more heat for distribution by blower. One-piece welded construction prevents heat loss, keeps soot and dust from entering air stream. There are J & C Power Heaters designed to burn oil, gas, or coal. Compact design, trim lines. Assure yourself of big heating job profits by carrying the complete line of J & C Power Heaters, manufactured by Jackson & Church Co.



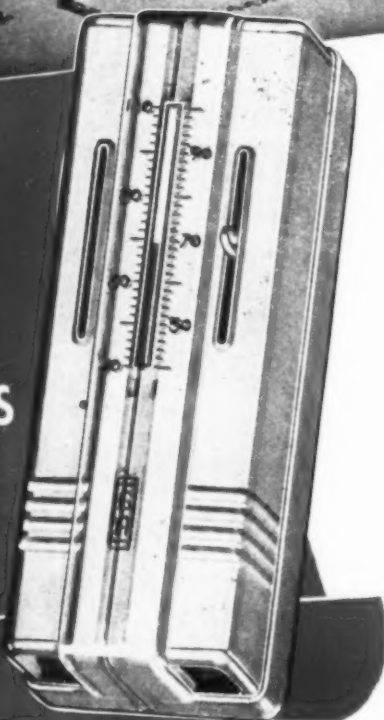
JACKSON & CHURCH COMPANY

WORK WELL DONE SINCE '81 • SAGINAW, MICHIGAN

**FOR
FALL DELIVERY...**



**ORDER
G-A
THERMOSTATS
NOW!**



The delivery situation on fast-selling Gleason-Avery Thermostats is improving steadily. But we can assure early delivery only on orders received promptly.

Make sure your customers will enjoy the advantages of safe, dependable G-A Thermostats this year. Make sure of plenty of those profitable, trouble-free G-A Thermostat sales. Order now.

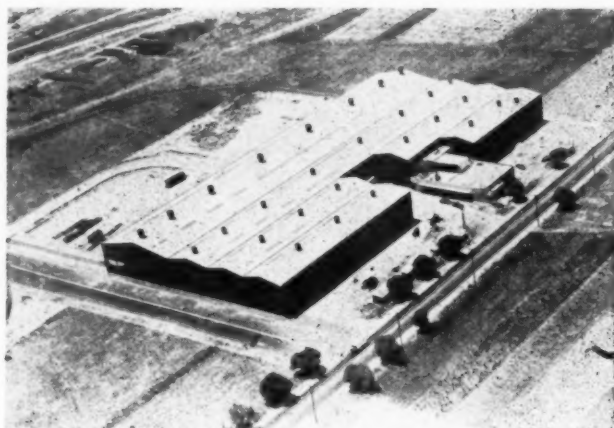
Approved by
Anthracite Industries Laboratory.

**No. 130 Furnace Sentry
Unit Package**

Provides accurate temperature control for hand-fired domestic heating systems. Comes complete with easily operated G-A Thermostat (finished in attractive mar-proof Mirror-Lite) . . . plus damper motor and all accessories, ready to install. Direct orders accepted when accompanied by wholesaler's name.

Gleason-Avery, INC.
AUBURN, N. Y.
A RELIABLE NAME IN TEMPERATURE CONTROLS

With the Manufacturers



Air view of the Ryerson steel-service plant under construction in the Los Angeles Central Manufacturing District

Ryerson in Los Angeles

Joseph T. Ryerson and Son, Inc., Chicago, announces construction well under way on their new steel-service plant, located in the Central Manufacturing District, southeast of the city of Los Angeles and fronting on Bandini Boulevard. This is the twelfth in the Ryerson system.

Ground for the plant consists of a plot 8.7 acres. The warehouse building, made up of seven spans of which two are 600 feet long and the largest 110 feet wide, covers an area of 200,000 square feet. It is a steel frame structure with special type sheet metal siding and corrugated glass skylights.

The office building, which will also house rest rooms and recreational facilities, is a two-story brick and concrete structure of distinctive and modern design. It forms an integral part of the whole plant and has a floor area of 12,000 square feet. Operations are scheduled to begin this fall.

**Wake Up and Sell!
Says Williams Oil-O-Matic**

The Williams Oil-O-Matic Division of Eureka Williams Corporation, Bloomington, Illinois, held a regional dealer meeting in Chicago on August 12 at The Stevens Hotel. This was one of a series of meetings which are being held from coast-to-coast under the direction of W. A. Matheson, head of the Williams Division.

Purpose of these meetings is to inform the present Oil-O-Matic dealers of the expansion program which aims to expand distribution facilities to a point at which Williams will be making 25 per cent of all automatic oil heating sales and installations by the year of 1950.

E. H. Davison presented production statistics to show that the Williams Division is making oil burners at more than three times its 1941 rate.

Penn Opens Additional Factory

A new factory building at 1351 Roosevelt Ave., Indianapolis, Indiana, has been leased by Penn Electric Switch Co. of Goshen, Indiana. This latest acquisition boosts the company's total to three factories. The second factory was put into operation on January 1 in Toronto, Canada.

According to Albert Penn, president, the additional manufacturing space is but another step in the company's expansion program designed to give faster deliveries and more efficient service to its customers. Production in the new plant is expected to start shortly after October 1.

The Indianapolis plant will fabricate and assemble some of Penn's present line of controls as well as new products recently developed.

THE BARTON CONVERSION GAS BURNER

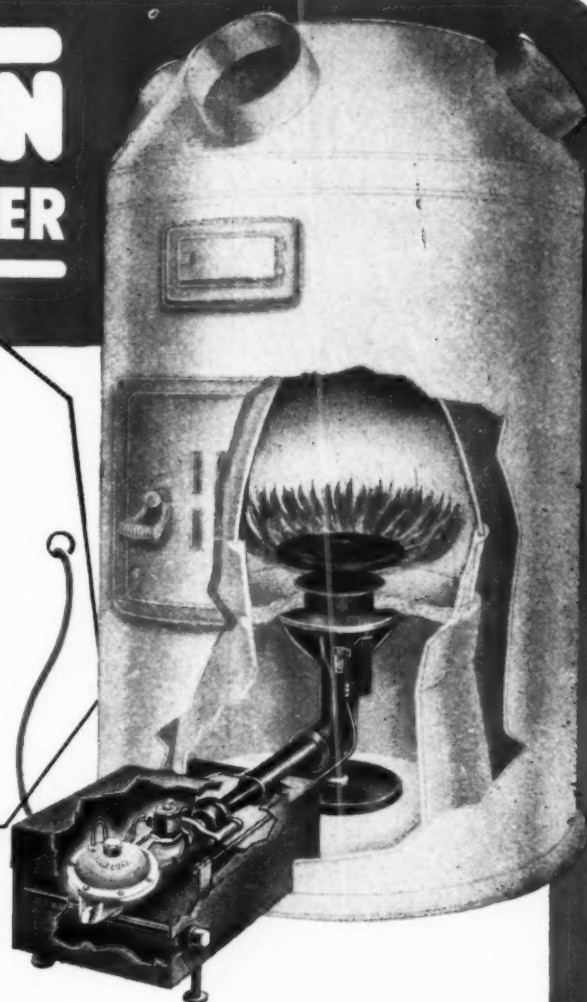
AGA APPROVED

**AVAILABLE for
IMMEDIATE
DELIVERY!**

Including all controls—transformer,
thermostat, limit control safety pilot



Converts Hot Air, Hot Water or Steam
Heating Plants to Modern Gas Heat



BARTON is the dealers' choice! Its one size and model fits firepot sizes from 14" to 30"—round or square heating plants. No need to carry a large stock of different sizes and models. BARTON's single size and model... pre-assembled at factory... assures easy, profitable installation... complete customer satisfaction.

PRECISION ENGINEERED—BARTON's precision engineering combines best features of other burners with exclusive innovations and advanced design. Delivers higher heating efficiency... even temperature... dependable, trouble-free, economical operation.

SAFER—Because all working parts, including gas valves, controls and gas pressure regulator, are completely protected by attractive, sturdy, enamel finish burner housing. Children can't tamper... no way control settings can be disturbed.

CLEANER—All-enclosing BARTON burner housing is finished in easy-to-clean, smooth baked enamel. No dangerous or unsightly projections. No dust-catching crevices... no exposed mechanisms to collect dirt.

PROFITABLE INSTALLATION—BARTON's all-in-one unit is completely pre-assembled at the factory... ready for quick, time saving installation. Each BARTON installation a more profitable installation because of uniformity and assured results on each conversion.

EXACT FIT—No matter the type heating plant... round or rectangular... hot air, hot water or steam... BARTON's improved wall-flame type burner with spreader-baffle directing flames to sidewalls assures perfect conversion... higher heating efficiency.

GUARANTEED—The BARTON is unconditionally guaranteed for one full year.

Dealers: Mail This Coupon, Now

Quick action will bring you immediately full information regarding the BARTON Gas Burner. Don't delay getting complete details about America's outstanding conversion gas burner and the full profit-making story for you!

THE BARTON COMPANY

64 GLENWOOD AVENUE • MINNEAPOLIS 3, MINN.

THE BARTON COMPANY
64 Glenwood Avenue
Minneapolis 3, Minnesota

Gentlemen: I want to know more about BARTON's profit-making story. Please send me complete information today!

Name.....

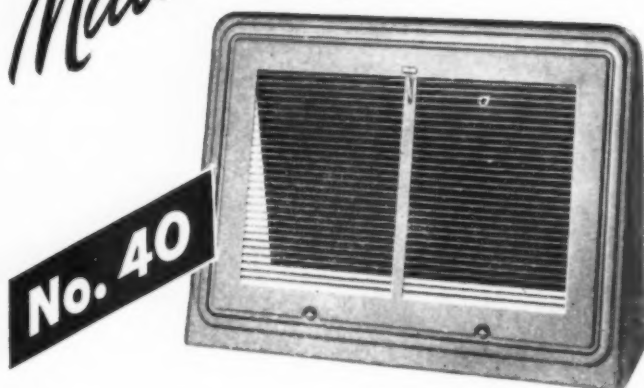
Company.....

Address.....

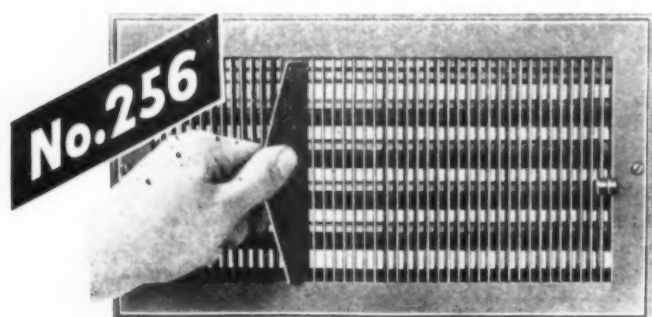
City..... State.....



*Matched Beauty
Matched Efficiency*



Teammates in every sense of the word in the handling of your gravity or air-conditioned jobs are these two smart U. S. Registers. No. 40 gives you every feature that simplifies installation and assures permanent satisfaction on Gravity Baseboard outlets. No. 256 Mul-



iple-Valve Four-Way Flow Air-Conditioning Registers are the acme of perfection for smooth operation and versatile side-wall air deflection on your finest forced air installations. Send for latest catalogs with complete specifications of current U. S. Register designs and fittings.

UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

With the Manufacturers

Delco-Heat Western Region Meetings

The Service Department of Delco Appliance Division, General Motors Corporation, Rochester 1, N. Y., recently held a series of two and three-day meetings, with comprehensive service instruction for their Delco-Heat distributors and dealers of the Western Region. Fifteen distributors and 150 dealers of Delco-Heat automatic home heating equipment were represented by 335 men at these meetings held during May and June in Billings, Montana; Spokane, Washington; Seattle; Portland; Sacramento; Salt Lake City and Denver.

The Delco-Heat distributors and dealers heard discussions by factory service personnel on the combustion of fuel oil, calculation of fuel rates, heat loss and heating surveys. The functions of basic types of oil burners were discussed, and performance of such functions by the Delco-Heat oil burner were stressed. Capacities and applications of Delco-Heat products, the installation of Delco-Heat controls, chimneys and draft conditions and the correct installation of the proper type combustion chambers were reviewed.

A presentation was made on "Service Procedure" including preventive maintenance, service and repair of Delco-Heat equipment, and special tools and test fixtures for use in performing such work. Procedure in handling Delco-Heat service policies, parts orders, returned goods, installation orders and warranty requests were pointed out as being all-important to the efficient functioning of the Delco-Heat service organization.

R. T. Reddington, Delco-Heat factory service manager, conducted the meetings with the assistance of Roy Case, Delco-Heat western coast sales representative.—K. O. Wolcott, service manager.

A REAL Time Saver



The No. 4B PUNCH by Whitney

This punch is accepted by leading contractors and dealers as a real time-saver in the shop and on the job. Men who use it every day know it can't be beat for clean, fast punching. Has a capacity of 1/4" through 16 ga., weight 3 pounds, 8 1/2" in length, depth of throat, 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key.



WHITNEY MFG. CO.

636 RACE ST. ROCKFORD, ILL.

NEW

RYBOLT GAS FURNACES in forced air and gravity models



Series RG 53
Gravity Model

An important contribution to advanced and economical gas heating is represented by the new Rybolt gas furnaces which include both forced air and gravity models in a range of sizes for small, medium and large homes.

These compact, efficient Rybolt furnaces include one-piece cast iron corrugated sectional heating elements built for long, dependable service.

Rybolt gas furnaces are modern in design and attractively styled in two-tone hammered gray finish.



THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO



... AND IT'S EVEN *Better*
WHEN YOU'RE SELLING

FREEMAN
LONG-LIFE
STOKERS
FIRST CHOICE OF AMERICA'S
FOREMOST HEATING ENGINEERS

IMMEDIATE DELIVERY
on all sizes!

See how Freeman gives you *everything* you need to do a successful job of stoker selling!

- A complete line of domestic, commercial, and industrial models in capacities up to 1200 pounds per hour.
- Sound engineering backed by research and testing.
- Years of experience dating back to the pioneer days of the industry.
- The security and protection of a financially strong manufacturer who will always be in the stoker business to serve you.
- The unequalled assistance and cooperation of the foremost plumbing and heating distributors in the country.
- Aggressive promotion.

Now! Give yourself the competitive advantage of Freeman's established leadership. *It will mean greater stoker sales and profits for you.*

FREEMAN STOKER DIVISION
ILLINOIS IRON & BOLT CO.
911 S. MICHIGAN AVE., CHICAGO 5, ILLINOIS

With the Manufacturers

H. A. Malcom now has the joint title of vice president and general sales manager of Airtemp Division of Chrysler Corporation, Dayton 1, Ohio.

Mr. Malcom joined Chrysler Airtemp in 1941. For two years he was regional sales supervisor in charge of the entire southern half of the United States.

In 1943, Mr. Malcom was promoted to assistant to the sales vice president. In this capacity, he co-ordinated the activities of all factory sales executives in the field.

In 1944, he was appointed assistant general sales manager of the home heating, air conditioning and commercial and industrial refrigeration division of Chrysler Corporation. In 1945, he rose to the position of general sales manager.



H. A. Malcom

Norman Products Company, Inc., 1150 Chesapeake Ave., Columbus 8, Ohio, manufacturers of Norgas gas conversion burners, announces the appointment of Harry S. Gibbard as chief engineer. Gibbard was formerly associated with the Lennox Furnace Company, including two years as chief engineer for their subsidiary, the Armstrong Furnace Co. He also served for two years as design engineer on domestic heating equipment at Round Oak Company and for one year as special assignment engineer at Young Radiator Company.

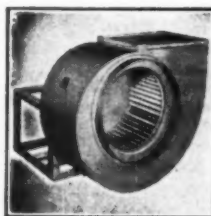


Harry S. Gibbard

YOUR BLOWER Requirements

AVAILABLE AT

Schwitzer-Cummins Company



★ **BLOWERS**
FOR EVERY PURPOSE

• Double Inlet and Single Inlet

HY-DUTY Blowers, 9 3/4" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom

Motor Mounting • Dual Units also available.

★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4 1/2" to 50".

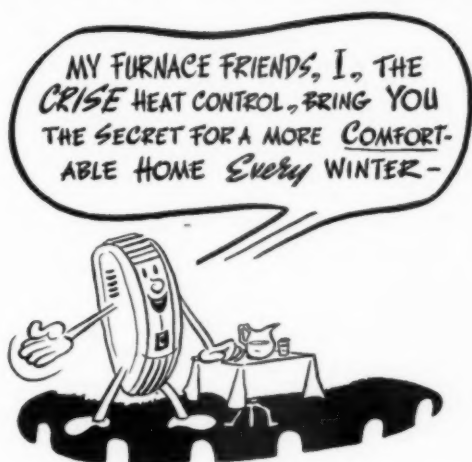


★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

VENTILATING DIVISION
SCHWITZER-CUMMINS COMPANY

1125 MASSACHUSETTS AVE. • INDIANAPOLIS 7, U. S. A.

HOW TO WIN CUSTOMERS — and Influence Sales



LET THIS LITTLE
WONDER SPEAK
FOR YOU—in Profits

STARTING
RIGHT
NOW!

Up-and-Down Temperatures waste coal, are unhealthy.

CASH IN, beginning NOW, on customer desire for greater all-winter comfort — by installing Crise Controls on hand-fired furnaces of all types . . . steam, hot water or warm air.

Resultant coal saving of up to 20% makes a hit with old customers, brings you new ones . . . and pays you handsomely.

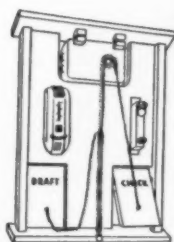
Easy to Install — Big Profits for You

Crise Automatic Controls are engineered for simple installation . . . you can serve more customers more quickly, make more friends.

And there's a goodly margin of profit in each sale. Yet Crise Control is not a luxury . . . all your customers can afford it, need its benefits.

The market's there . . . GET YOUR SHARE !

Don't Delay — SEE YOUR CRISE JOBBER at once



CRISE DEALERS — *build your sales!*

Ask your jobber about the Demonstration Panel he can get for you . . . it will help you sell in your shop and at the customer's home.



The
CRISE
MANUFACTURING CO.
COLUMBUS 16, OHIO

PEERLESS

Furnace Fittings and Repair Parts

Send for catalog just off the press giving complete line of furnace fittings.

Peerless can also supply you with repair parts for all makes of furnaces and boilers.

Send for New Repair Parts Catalog.

Pioneers in Warm Air Heating Equipment for Almost Half a Century.

PEERLESS FOUNDRY COMPANY

1855 Ludlow Ave.

Indianapolis 7, Ind.

With the Manufacturers

The Herman Nelson Corporation of Moline, Illinois, this year is making special observance of its 40th anniversary.

Herman Nelson employs more than 400 persons and occupies 133,134 square feet of company-owned facilities. A policy of conservative, steady growth has resulted in the establishment of a nationwide sales and service organization of distributors, branch offices and product application engineers. Products manufactured include unit heaters, unit ventilators, propeller fans and centrifugal fans.



Herman W. Nelson

A booklet, entitled "28,965,768 Man Hours Ago," has been published, reviewing the history of the company and is available on request.

To honor all employees with ten or more years of service with the company, Herman Nelson held a 40th anniversary dinner party June 26 at the LeClaire hotel in Moline. Diamond emblems for more than thirty years of service were presented to two employees, Robert E. Stein and John L. Downing.

Twenty-five year service emblems were presented to six, twenty year emblems to ten, fifteen year emblems to thirty and ten year emblems to thirteen employees.

Pure Oil Distributes York-Heat

The Pure Oil Company has been franchised by York-Shipley, Inc., York, Pa., to distribute its domestic line of conversion oil burners, boiler-burner units and winter air-conditioners in Minnesota, Iowa, North and South Dakotas and Western Wisconsin.

PEXTO .. MAKES FABRICATION OF SHEET METAL *Easier ... Better*

PEXTO Machines and tools have been made for so many years . . . 160 in fact . . . that they have become a tradition of the trade of Sheet Metal Fabrication.

We have not only supplied your needs, but have anticipated the trend . . . created basic principles to make fabrication Easier, Better.



GROOVING MACHINES, HAND AND POWER

THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHINGTON, CONNECTICUT, U. S. A.

THERE'S A *Federated* SOLDER FOR EVERY JOB—



FEDERATED SOLDERS are tops in quality, uniformity and dependability. They have maximum strength and fluidity. They possess excellent bonding qualities, fine grain structure and uniform melting points.

All of these properties add up to quicker, easier application . . . more production in less time. That's economy—and satisfaction. Try Federated Solder.

Federated Solders are available in the following types:

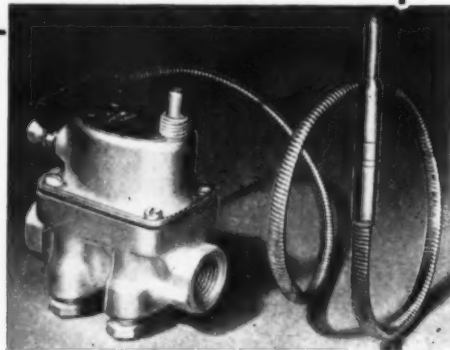
BAR • STRIP • TRIANGLE • DROP
ACID CORE • ROSIN CORE • PIG
SOLID WIRE • SEGMENT • SPOOL
WIPING CAKE • RIBBON

MADE IN ALL STANDARD COMPOSITIONS
SPECIAL ALLOYS TO SPECIFICATION



FEDERATED METALS DIVISION
American Smelting and Refining Company
120 Broadway, New York 5, N. Y.
Nation-wide service with offices in principal cities

New MR-2 SAFETY THERMOVALVE



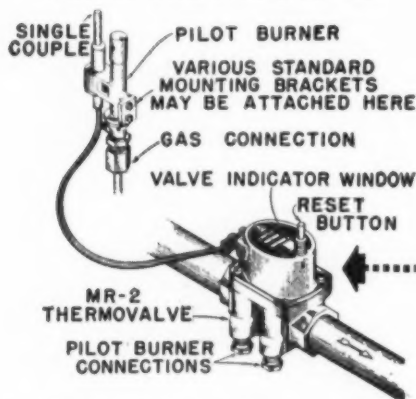
THIS new electro magnetic thermovalve assures unfailing safety in gas control applications. Used on space and unit heaters, central and floor furnaces, water and range heaters, hot water and steam boilers. Handles manufactured, natural or LP-Gases.

Check these outstanding features:

- ✓ Streamlined design.
- ✓ High-flow capacities.
- ✓ Visual valve position indicator.
- ✓ Design simplicity.
- ✓ Sealed electro magnetic assembly.
- ✓ Heavy duty 5/16 round thermocouple.
- ✓ Flexible armored cable leads.

On the diagram below, the new MR-2 valve and the new 26-R Pilot Burner are used for out-pilot safety control. No outside current is required. Valve holds open until released by pilot-flame failure. 100% gas shut-off will be maintained until pilot light is reignited and valve manually reset by push button.

MR-2 INSTALLATION



For further information, contact your nearest factory branch or distributor, or write for Catalog 52-B and Manual FI-101.

GENERAL CONTROLS
801 ALLEN AVENUE
GLENDALE 1, CALIF.

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS
KANSAS CITY • NEW YORK • DENVER • DETROIT • CLEVELAND • PITTSBURGH
HOUSTON • SEATTLE • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES

15-2

With the Manufacturers

Ingles Expert on Marital Relations

James J. Ingles of Maplewood Machinery Co., 2634 Fullerton Ave., Chicago 47, failing to interest safety organizations and automobile clubs in giving his wife Beatrice a medal after she had driven their family automobiles 300,000 miles in the last 25 years, without an accident or a traffic violation ticket, bought, paid for and presented the medal himself.—*Chicago Tribune*.

Automatic Devices Company, 53 W. Jackson Blvd., Chicago, manufacturers of the Weather-Man—an automatic regulator which controls building temperature from the outside—announces the appointment of Willis G. Pennington as director of sales.

Mr. Pennington has been in the heating field since 1936 and was formerly connected with the Stoker Division of the Iroquois Coal Company and the Peerless Manufacturing Company. Recently he was sales manager for the Detroit Stoker Company.



Willis G. Pennington

GE Motors in New DeKalb Plant

General Electric Company has acquired the plant operated during the war by Interstate Aircraft and Engineering Corporation at DeKalb, Illinois, for the production of fractional horsepower motors.

The plant, on a 16-acre tract about one mile northeast of DeKalb, includes 17,000 square feet of floor space. Production is expected to exceed a million fractional horsepower motors a year, according to R. C. Muir, vice president in charge of the department. Eugene F. Harmison is plant superintendent.

LINE UP NOW WITH ECON-O-COL STOKERS



... to cash-in on the huge backlog of stoker sales! You increase your profits through faster sales, make fewer service calls by selling ECON-O-COL's complete line of precision-built, highest quality stokers. And a hard-hitting promotional program backs you up every step of the way! Details of our exclusive dealer franchise, now available in several areas, await your inquiry. Write or wire us today.

ECON-O-COL
COAL BURNER



THE SHIELD
OF QUALITY

ECON-O-COL

The "Stronghearted" Stoker

BUILT BY COTTA TRANSMISSION
COMPANY • ROCKFORD, ILLINOIS

MORRISON PRODUCTS

OFFER MANUFACTURERS

DEFINITE SAVINGS

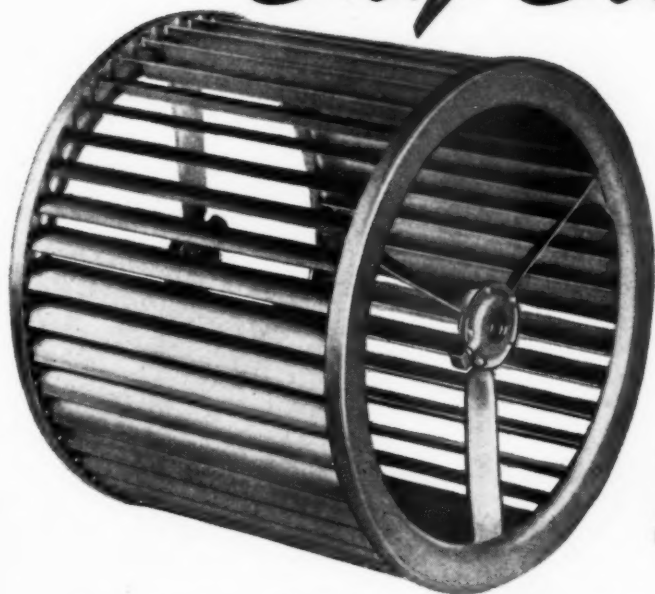
WHEN THEY

Buy Blower Wheels

and

build their own

**BLOWER
ASSEMBLIES**



Morrison Continuous Engineering Service is available to assist you in setting up blower assembly production in your own plant. It includes instructions and drawings showing how to build your assemblies, the equipment required, and performance data on various sizes. This results in definite savings in overhead, in cost of finished blower assemblies.



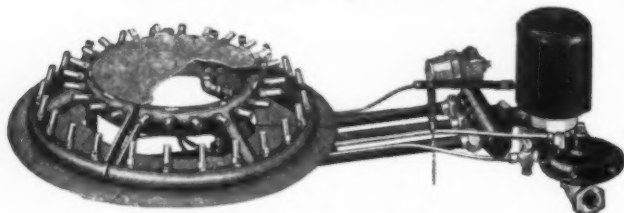
MORRISON

Airstream

BLOWER WHEELS

MORRISON PRODUCTS, INC. • East 168th St. and Waterloo Road • CLEVELAND 10, OHIO

The Real Facts on Conversion Burner EFFICIENCY



No. 324-B Barber Burner



No. 104-B
Barber Burner



The user of a gas conversion burner is interested principally in two things: *performance*, in terms of heating adequacy and trouble-free operation—and *economy*, represented in the initial price of the equipment and its fuel efficiency. Based on this logical reasoning, a nation-wide preference for Barber Automatic Burners is easily understood.

Perfected Barber design, devoid of all dubious or "experimental" principles, is famous for year-in-year-out, dependable operation, with minimum servicing. Barber economy is reflected first in the moderate cost of the installation, for the owner pays only for the essential mechanical equipment, and not for "trimmings" which have no real utility. Low operating cost and high fuel efficiency, on any type of gas, are certain because of the complete combustion effected by patented Barber Jets, with their unique auxiliary air feed.

For a third of a century—in hundreds of thousands of homes and industries—Barber Burners have well proved their claim to superiority, and this for the reasons stated above. Get the burner that's custom-built into the present heating plant.

• Write for Catalog illustrating and listing many types of Burners for Appliances, Gas Conversion Burners for Furnaces and Boilers, Regulators, etc.

THE BARBER GAS BURNER CO.
3704 Superior Avenue Cleveland 14, Ohio

BARBER BURNERS

News Items

Otten Sheet Metal Works is the firm name under which Norbert G. Otten and Bernard J. Otten have published a certificate that they are conducting business at 822 El Pasa Drive, Los Angeles, Calif.

A new sheet metal shop will be erected at 550 South Crocker Street, Los Angeles, Calif., for the Worthing Manufacturing Company of 627 East Third Street, Los Angeles. The brick structure will cover areas of 55 x 84 feet and 23 x 25 feet and will cost \$19,500.

A building permit has been issued for construction of a new sheet metal shop at 730 Gibbons Street, Los Angeles, Calif., for G. B. Cogorno of 3121 Chaucer Street, that city. It will be 40 x 60 feet in area, and will cost \$4800.

A building permit has been issued for construction of a new sheet metal shop at 5800 South San Pedro Street, Los Angeles, Calif., for the Los Angeles Deep Drawing Company, to be 40 x 100 feet in area, and to cost \$10,000.

Hiller Sheet Metal Works, Milwaukee, Wisconsin, is now in new quarters at 1818 S. Eighth Street, telephone Mitchell 0252. The company was formerly located at 1406 W. Washington Street.

The LaFollette Sheet Metal Shop, headed by E. J. Teacher, has moved to a new location in the New Graham Building, on North Tennessee Avenue, LaFollette, Tenn. The firm does an extensive line of work in furnace, gutters, blow pipes, roofing, etc.

PROMPT

SHIPMENT



ON THE SQUARE

Yes, Sir, we know how to roll rings that are accurate in every dimension, furnished with or without bolt or rivet holes. You'll appreciate this when you back them up or fit them on the job.

Used for reinforcing tanks, joining pipe or smoke stacks, installing air conditioning fans, and thousands of other uses.

Write for standard sizes and discounts.

NATIONAL METAL FABRICATORS
2136 So. Sawyer Ave., Chicago 23, Ill.

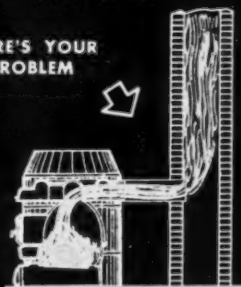
**THE *field*
DRAFT
CONTROL**

**CONTROLS
THIS DRAFT
TOO**

GATE BALANCED
AT FACTORY
DOESN'T CLOG
OR WARP
QUICKLY
RESPONSIVE
MADE OF HEAVY
MATERIAL
ROLLING TYPE
HINGE PIN
FREE SMOKE
PASSAGE



HERE'S YOUR
PROBLEM



Excessive, uncontrolled chimney drafts waste up to 25% of the fuel burned in nine plants out of ten!



HERE'S YOUR
ANSWER

A FIELD DRAFT CONTROL holds drafts to a minimum, provides fuel savings ranging up to 25%!

● When a heating plant performs **BADLY**, the owner **SQUAWKS . . .** but **LOUDLY!** The product is 'lousy'; the dealer is a crook!" Yes, word-of-mouth advertising work **BOTH WAYS**. And the pity is that the heating plant may be a beautifully engineered job, lacking only proper draft control for perfect operation. Good, inexpensive, trouble-free insurance **AGAINST** this type of bad publicity is a **FIELD BAROMETRIC DRAFT CONTROL** on every installation. But be sure you install a **FIELD**. Remember this: Leading heating equipment manufacturers, with facilities to test and re-test every draft control made, have picked **FIELD** as standard equipment.

**FIELD
CONTROL
DIVISION**

Field

H. D. CONKEY & COMPANY • MENDOTA, ILLINOIS

**LIKE YOUR PROFITS
*HOT or COLD?***

With a Palmer Team
working the year round for you,
you can have both.



IN WINTER

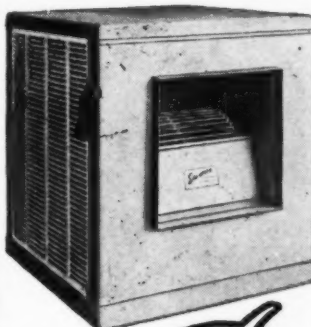
**Palmaire
SUSPENDED
UNIT
HEATER**



The ideal heater for the store or small factory. Hangs from the ceiling and leaves valuable floor space clear. No duct work required. Fully automatic, with built-in features that pack a knockout selling punch. Just one of a complete line of high quality gas furnaces.

IN SUMMER

***SNO-BREZE*
EVAPORATIVE
COOLERS**



Perfected in Arizona, the testing ground of air-conditioning, where coolers have to be efficient to sell. Backed by 30 years of manufacturing know-how. Complete line of blower and "air-stream" fan types are available.

Write
for
catalog

Palmer
MFG. CORP.
Phoenix, Arizona



EFFECTO-GRILLE
FORCED AIR
REGISTERS and GRILLES
Priced with the Lowest

Prewar quality . . . Adjustable Fins . . . Positive shutter operation . . . Reasonably prompt shipments.

WE ALSO MANUFACTURE A COMPLETE LINE OF GRAVITY REGISTERS AND GRILLES

Prompt attention to all inquiries.

EFFECTO-GRILLE
COMPANY
9930 FREELAND
DETROIT 27, MICH.

News Summary

(Continued from Page 56)

to \$273,207,000, indicating the effect of more stringent federal controls on this class of construction.

The total of all construction contracts, including heavy engineering works in the eastern states, reached \$807,914,000 in June compared with \$952,418,000 in May, the Dodge report showed.

Stoker Coal Prospects

THE SUPPLY of domestic stoker coal for use in small residential and apartment-house stokers apparently will be sufficient to meet most or all requirements of present users and prospective users during the next heating season, declares a statement from representatives of the Sales Advisory Committee of Bituminous Coal Research, Inc., and members of the Board of Directors of the Stoker Manufacturers Association.

The report also states that in some major producing districts an increase in the production of double-screened, domestic stoker coal may be expected in the period beginning August 1, 1946 and ending March 31, 1947, as compared with the same production period a year ago. It also indicated that an increase in the production of 1¼ inch and 1½ inch coal for use in commercial and industrial stokers is anticipated in some of the major producing districts.



To Give You Precision . . . Specialized Machine TOOLS

At the Nu-Way plant specially designed machine tools provide uniform quality.

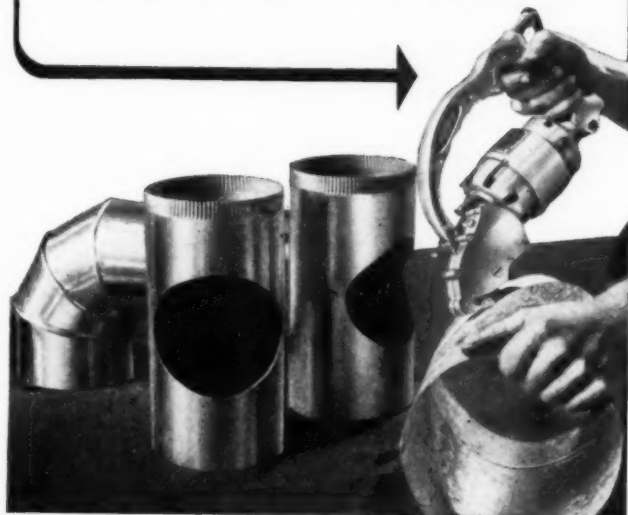
Every operation of manufacture is geared to the production of uniform parts so that years later replacements and repairs offer no special problem. Such precision construction builds confidence both in customers and in the product.

When you handle Nu-Way oil burners, you are assured of the best in engineering, workmanship, materials and delivery.

The Nu-Way Corporation
Quality Oil Burners Since 1921, Rock Island, Illinois

Anything... any shape...
any place...

you can cut with snips you can cut
FASTER, SAFER, CLEANER



with a 7½ lb. Stanley "Mighty Midget"
UNISHEAR

And the "Mighty Midget" is a lot easier to handle than snips. All you've got to do is guide it... and the comfortable grip pivoted handle makes that easy no matter what your stance or where you're working. Cuts smoother, cleaner...any line, any shape...straight, curved or angled...inside or outside. Accurate to a hairline. Safe to operate. Interchangeable, easily ground blades. Short yoke permits working close to shoulders and beads on formed pieces and where space is limited. The "Mighty Midget" will pay its way...in the shop and out on the job. Write today for complete information. Stanley Electric Tools, New Britain, Connecticut.

No. C18 Circular Cutting Attachment... With the "Mighty Midget" secured in Cradle, you can cut perfect circles any radius from 2½" to 15".

Cradle... Converts the "Mighty Midget" into a bench machine for fast production of stock pieces.



STANLEY

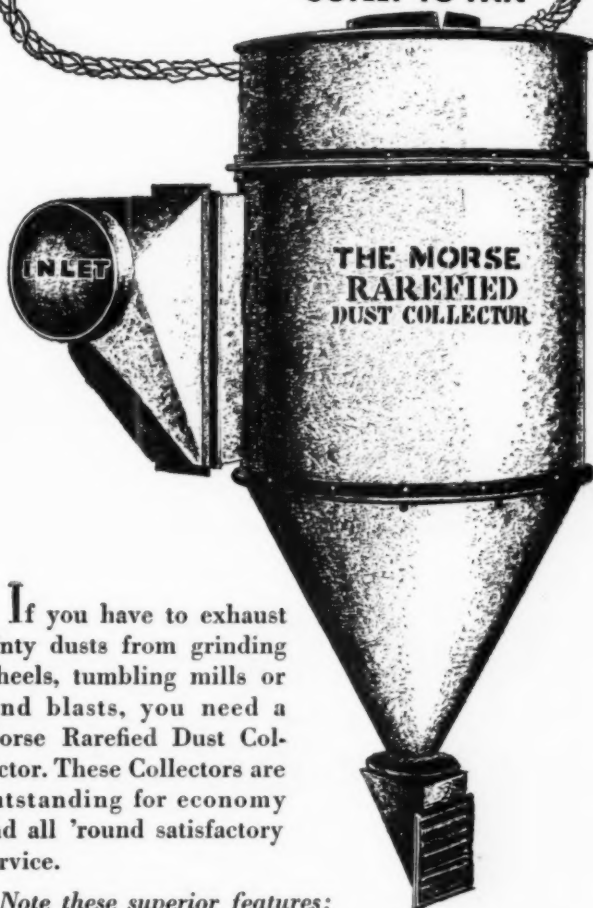
Trade Mark

HARDWARE · HAND TOOLS · ELECTRIC TOOLS

AMERICAN ARTISAN, September, 1946

FOR EXHAUSTING FLINTY DUSTS
**MORSE RAREFIED
DUST COLLECTORS**
DO A BETTER JOB

OUTLET TO FAN



If you have to exhaust flinty dusts from grinding wheels, tumbling mills or sand blasts, you need a Morse Rarefied Dust Collector. These Collectors are outstanding for economy and all 'round satisfactory service.

Note these superior features:

1. No abrasive material gets through to the fan.
2. There is a constant air flow at hood inlet.
3. No moving parts.
4. No cloths or screens to clog and require expensive maintenance or replacement.
5. Collected material is discharged automatically to storage bin.
6. No undue wear on collector parts.

Write or phone for complete information on these superior collectors. A Goergen-Mackwirth engineer will gladly survey your problem and submit recommendations.

Goergen-Mackwirth
COMPANY, INC.

817 SYCAMORE STREET, BUFFALO 12, N. Y., Phone: (Cleveland 6661)
SPECIALISTS IN THE MOVEMENT AND CONTROL OF AIR

PERFORMANCE PLUS! ATH-A-NOR Furnaces and Parts

★ ★ ★

Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

You're sure of top drawer performance when you install ATH-A-NOR Furnaces and parts exclusively. Over fifty years of furnace manufacturing experience guarantee you home heating plants with performance ratings and lasting qualities to satisfy the most critical clients. Investigate now . . . write for literature.

MAY-FIEBEGER COMPANY

*Manufacturers of Quality Heating Equipment
for Over Fifty Years.*

Newark

Ohio

Greater Copper Supply

PROLONGED strikes at smelters and refineries have resulted in an accumulation of about 60 million pounds of salable copper in the form of concentrates and blister copper, says Phelps Dodge Corporation.

All this material can now be smelted and refined and made available for sale in a relatively short time. There has been a marked improvement in the labor supply, the demand for copper is strong, and the outlook for the second half of 1946 appears encouraging.

Strikes from March until June cut first half sales of refined copper to 51,271,000 pounds, compared with 195,437,000 in the corresponding period a year earlier.

Home Building Behind in Chicago

CHICAGO is so hopelessly behind in its home construction that it may take years to catch up with the goals set by the Mayor's Emergency Housing Committee.

This is indicated in a survey on building conditions made by the Chicago Metropolitan Home Builders Association as of August 1.

Only 250 houses of 11,627 started this year have been completed, according to Arthur E. Fossier, president of the association. A total of 19,545 priorities were issued. The mayor's committee proposed 161,000 dwellings by the end of 1947.

Approximately 8,000 houses stand unfinished today because of the lack of such materials as hardwood

TRIANGLE SHOCK ABSORBING PILLOW BLOCK

Designed by Triangle engineers for fans, blowers and other devices requiring silent operation, perfect alignment and self-lubrication.



Preloaded oil-proof cushion built into the bearing. Ball-and-socket design. Write for samples and complete information.

TRIANGLE MANUFACTURING CO.

392 DIVISION STREET

OSHKOSH, WISCONSIN

More Efficient Heating With **AIRTHERM** Direct-Fired Warm Air Heater (Oil or Gas Fired)



Direct heat transfer through a single thickness of metal results in the high efficiency and low operating cost of the Airtherm Direct-Fired Warm Air Heater. The Airtherm is a self-contained heating system — ready to connect to your fuel and power supply lines.

Capacities from 650,000 to 1,950,000 B.T.U.'s. Either oil or gas-fired.

✓ Write for Bulletin 801 describing
this economical heater in detail.

AIRTHERM

MANUFACTURING COMPANY

AT-43

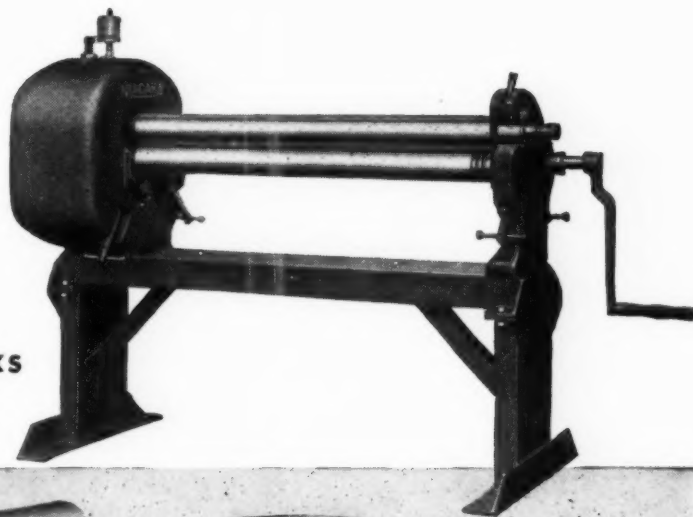
706 So. Spring Ave.

St. Louis 10, Mo.

● Sheet metal men make a great many things, including money, with Niagara Slip Roll Forming Machines.

Niagara design makes them easy to operate because the end of upper roll swings forward so that formed cylinders can be withdrawn without distortion. Upper roll opens horizontally, eliminating lifting of roll or work. Trigger release speeds up unlocking, opening and closing upper roll.

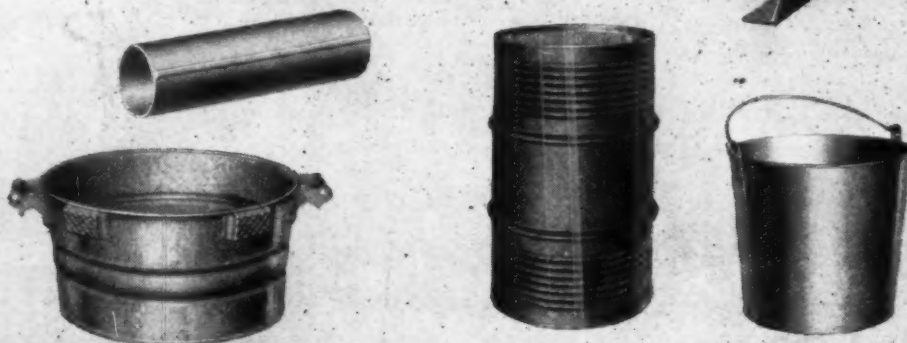
Made in various sizes and capacities,—hand and power operated.



NIAGARA MACHINE AND TOOL WORKS
BUFFALO 11, N. Y.

District Offices: New York, Cleveland, Detroit

Typical
Examples
of the
Work Done on
**NIAGARA
SLIP ROLL
FORMERS**





....OFFER FUEL-SAVING CONVENIENCE OF HEAT REGULATOR SETS

Your furnace-user friends will thank you later — if you urge them *now* to install a new A-P DEPENDABLE Heat Regular Set on their coal fired furnaces.

With uniform, comfortable home temperatures controllable at the touch of a thermostat dial, and the season's savings of scarce coal totalling 10% to 25%, these homemakers will have plenty of reason to remember you — year after year — for your friendly suggestion.



The new A-P Heat Regulator Set — precision-built for years of DEPENDABLE service — is available for steam, hot water, or warm air heating systems. It is complete with modern wall Thermostat, Limit Control, Damper Regulator, Transformer, and complete installation kit, with full instructions for easy installation.

WIRE OR WRITE
TODAY for complete
details—prices, sales
helps, displays,
folders and news-
paper ad mats.

AUTOMATIC PRODUCTS COMPANY
2470 NORTH THIRTY-SECOND STREET
MILWAUKEE 10, WISCONSIN



DEPENDABLE Controls

FOR HEATING • AIR CONDITIONING • REFRIGERATION

flooring, soil pipe, rock lath, lumber, electrical and plumbing necessities.

In some respects, 1945 was a more successful year than the present, the survey shows. Only 11,130 houses were started in the 12 months of 1945 but 7,000 were turned over to their tenants in 1945 and 2,800 in 1946.

There are 1,330 houses still unfinished from last year, according to the survey.

Average time required for construction was nine months in 1945. Now the contractors allow six months. In ordinary times, three months was considered sufficient to build a house.

To Aid Zinc Output

TO PLACE all domestic zinc mines on the same eligibility basis under the Premium Payment Plan for Copper, Lead and Zinc, and to increase production, CPA announces that zinc mines which started operations after October 27, 1943, are eligible for the same premium payments as old producers.

Under the Premium Price Plan all zinc mine production will be eligible for A, B and C production quotas. Previously, zinc producers who started operations after October 27, 1943 were not permitted to participate in the B and C quotas. This plan was instituted February 1, 1942 as a war measure to bring out production from the marginal-operation mines. It is not connected with the recent Wyatt premium payment plan for certain scarce building materials. Premium payments under the CPA copper, lead and zinc plan are made on output above a production quota set for each mine.

WHITNEY-JENSEN PRODUCTS

30 YEARS EXPERIENCE

49" - 20 ga.
BRAKES

BENCH or FLOOR
MODELS

FOR
STRAIGHT BENDING
OR
BOX FINGER
WORK



Write for Literature



No. 4 ANGLE IRON SHEAR

CAPACITY 2"x2"x1/4" ANGLES
WEIGHT—42 LBS.

A "Must" tool where
angle iron is cut—in the
shop or on the job.

WHITNEY METAL TOOL COMPANY
91 FORBES ST. • ROCKFORD, ILL.

Swartwout Ventilators do an outstanding job for your customers

**For clean-cut installations
of efficient roof ventilation,
use Swartwout Equipment**

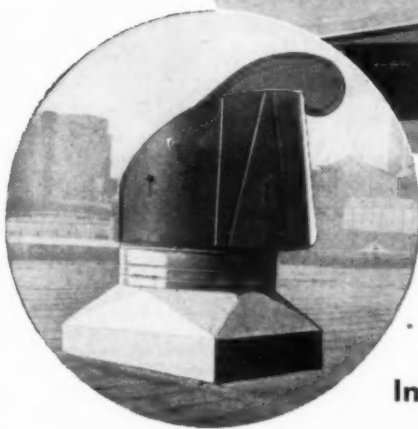
Swartwout Ventilating Equipment supplies complete *natural* ventilation, or forced roof ventilation where needed. You can apply one or more Swartwout Ventilator types to factories, warehouses, garages, airport buildings, bus terminals, power houses, etc., and secure results that make satisfied customers.

Be sure you have the Swartwout Ventilator catalog handy, and Bulletin 320 — guide to installation. Write for full information to The Swartwout Co., 18511 Euclid Ave., Cleve. 12, O.

AIRMOVER

Dexter
Heat-Valve

Rotary



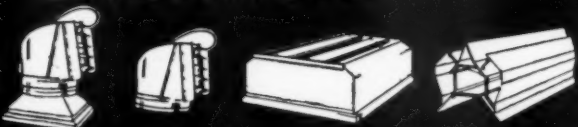
Airjector

Powrvalve

Airvalve

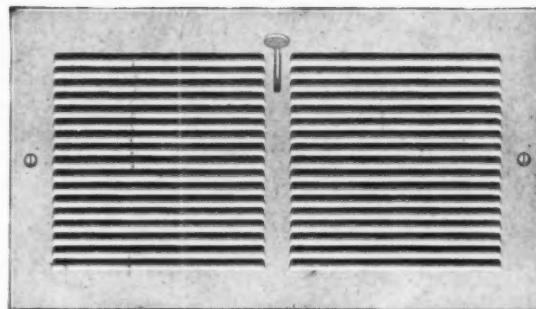
Intake Louvers

Swartwout VENTILATION
SPECIALISTS



Auer "7000" Series AIR CONDITIONING REGISTERS

**ADJUSTABLE
FOR 2-WAY
DIRECTION**



Here is a fine register for any forced air job where up-and-down directional control is sufficient. This Air-Flex "7000" design is simple, sturdy, efficient, good looking, moderate in cost. It is distinguished by neat workmanship and careful finish. It has single louvre and adjustable fins, set when delivered at about 22° degrees downward. Like all Auer registers, it is equipped with exclusive patented *spring tension* deflector device, permanently positive—a feature which of itself would make this register preferred by many of our customers. The Air-Flex is easy to install, and is furnished for wall or baseboard location, also for intake use.

Auer offers a complete line of modern and attractive floor, base, and wall registers and return faces, for gravity or air conditioning systems—including all air directional types. We also make flat metal grilles for ventilation, concealment, or other purposes.

Ask for Auer Register Book
—or Special Grille Catalog.

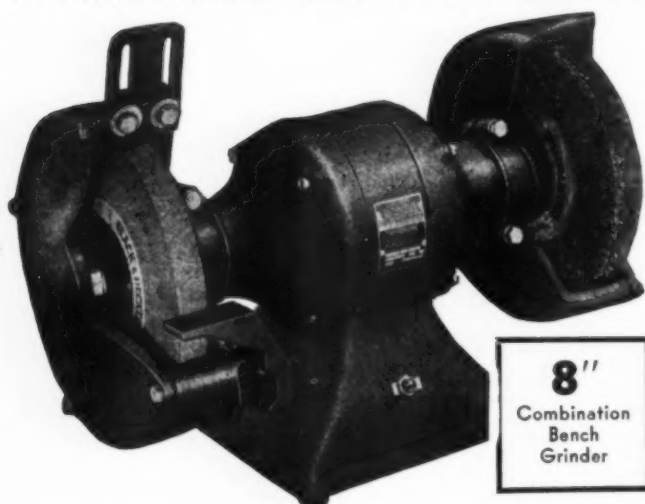
THE AUER REGISTER COMPANY
3608 Payne Avenue Cleveland 14, Ohio

AUER REGISTERS & GRILLES

For Air Conditioning and Gravity

Sharper TOOLS! Smoother JOBS!

... with Black & Decker BENCH GRINDERS



Black & Decker Bench Grinders keep a keen cutting edge on your tools—help you turn out cleaner work, faster. These Grinders handle many other jobs, too! They grind pipe, rings, connections, fixtures, etc.—wire brush, buff, burnish, polish and finish sheet metal—remove weld marks and saw or shear burrs.

Long wheel spindles and tapered end housings make room for large or odd-shaped pieces. Powerful motors maintain high operating speeds under pressure—help you get work done sooner. Many other features.

Ask your Black & Decker Distributor about Black & Decker Bench Grinders and other Electric Tools for heating, piping and air-conditioning work. Or write to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson 4, Maryland.

"WHIRLWIND"* WIRE BRUSHES

Perfect team-mates for Black & Decker Grinders. Tougher, denser, last longer . . . because each tuft is locked in place to stay. Six wheel sizes: 4" to 12". Three wire sizes. Three thicknesses. Fit almost any arbor or spindle.

*Trade Mark Reg. U. S. Pat. Off.



LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS

DRILLS • HOLE SAWS • DRILL STANDS • PORTO-SHEARS
BENCH GRINDERS • SANDERS • PORTABLE GRINDERS

Repair Loans

HOME-OWNERS are financing property repairs and improvements under the FHA program at the rate of more than 80,000 a month. Loans made to property owners for repairs and improvements and reported to the FHA for insurance numbered 80,125 in May and 85,709 in June. More than 311,500 loans are reported for the first half of 1946, compared with 115,200 reported in the first half of 1945 and 286,300 in the last half.

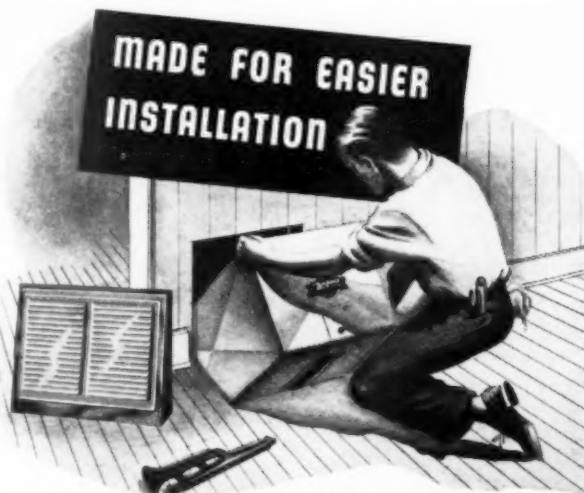
From the time the FHA was established in June, 1945 through June, 1946, a grand total of 5,640,633 Title I loans for \$2,235,496,641 was reported for FHA insurance—all private funds.

Now, under the latest Wyatt directive this repair volume is to be drastically curtailed in order to channel additional material into new housing.

Kruckman— Washington Letter

(Continued from page 51)

as if it were inspired gospel, and if there is one who does not subscribe to Kiplinger's Letter, that exceptional business man did not come into this correspondent's orbit. Wherever one went you were asked what could be done about the Washington mess; how could the Government be revamped, cleaned up, invigorated, cleared of socialism, communism cut down, and placed back on the road to the old democracy. When it was suggested that the Government, after all,



THE BARNES BETTER BILT GAS FLOOR FURNACE

The BARNES BETTER BILT GAS FLOOR FURNACE is enthusiastically endorsed by many home owners and builders because of the simple, quick method of installation. It's merely a matter of cutting a hole in the floor and wall furnace-size—then presto! it goes in easily and with a minimum of muss or fuss.

And there are other important, money saving reasons why the BARNES BETTER BILT GAS FLOOR FURNACE appeals to so many builders. There's the heavy 16 gauge heating element—the slotted Port Bunsen type burner—the 26 inch overall depth which requires no pit, no basement—the new, neatly designed non-vision grill—the fact that it meets the latest rigid requirements of A. G. A. standards for safety, economy and efficiency—and the ten year guarantee that insures your investment.

For further information on the Barnes Better Bilt Gas Floor Furnace write today



BARNES HEATING & VENTILATING CO.
SALES OFFICE 330 E. FOURTH ST. LONG BEACH 2, CALIFORNIA

**For Small
Quantities
of Large
Rivets**

The New CHERRY G-55 HAND GUN

Tight clinching,
Pull-through
Hollow type
Cherry Blind Rivet

High Strength,
Self-plugging type
Cherry Blind Rivet



"A CHERRY BLIND RIVET for every job . . . A Cherry Rivet Gun for every need." The Cherry line of blind rivets and installation tools was conceived around this idea. And the idea continues to expand.

THE NEW G-55 HAND GUN was designed especially for small-quantity users of the larger sizes (7/32", 1/4", 9/32") of Cherry Blind Rivets. (Used with an adapter, it also installs the smaller rivets.) The more expensive pneumatic guns are primarily production line tools. But for small-quantity rivet installation, or for field work where air pressure is not available, the hand gun is perfect. The relatively inexpensive G-55 Hand Gun is light weight and easy to handle.

CHERRY BLIND RIVETS are available in aluminum, steel, brass and Monel.

For more information regarding Cherry G-55 Hand Gun, and other Cherry Rivet products, write to Dept. J-200, Cherry Rivet Company, 231 Winston Street, Los Angeles 13, Calif.

CHERRY RIVETS. THEIR MANUFACTURE & APPLICATION ARE COVERED BY U. S. PATENTS ISSUED & PENDING

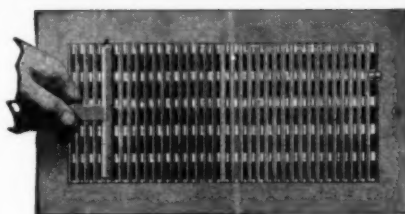
Cherry Rivet

Company

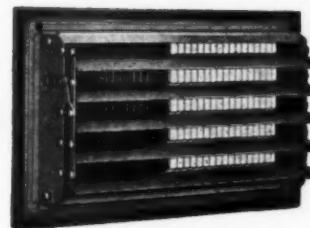
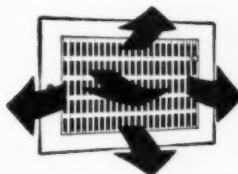
LOS ANGELES 13, CALIFORNIA

Independent

WROUGHT STEEL REGISTERS
PROVIDE
4 WAY ADJUSTABLE AIR FLOW



Design No. 238



Right . . . left . . . up . . . down . . . air flow at any angle desired, in addition to straight outward . . . plus the durable construction which has distinguished Independent products for more than 46 years . . .

These are the reasons for the popularity of this No. 238 Independent Wall Register. Vertical grille bars are manufactured at an angle of 30 degrees, one-half to the right and one-half to the left. They may be bent to direct air flow at any other right or left angle or straight outward. Horizontal multiple valves located at the back of register can be set to deflect air flow up, down, or straight outward. Available in standard sizes 8"x6" to 30"x8".



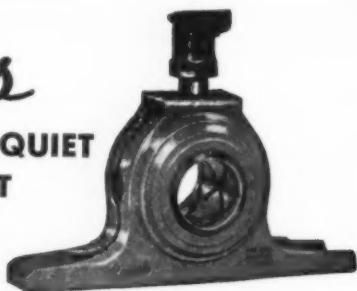
Send for Catalog 41-AC

Always Leading—Always Progressing

THE INDEPENDENT REGISTER CO.

3747 E. 93rd STREET • CLEVELAND, OHIO

Years
OF QUIET
EFFICIENT
SERVICE!



RANDALL PILLOW BLOCKS give years of quiet, efficient service with exceptionally low maintenance requirements.

They are self-aligning, self-lubricating and easy to install . . . available in types to meet every blower need.

Write for full details today. Ask for catalog No. 42.

RANDALL GRAPHITE PRODUCTS CORPORATION
609 W. Lake St. Dept. 911 Chicago 6, Ill.

belongs to the voter; that the man with the ballot is the boss; that the business man could probably solve some of the problems by giving as much attention to the business of his Government as he does to his other affairs, the invariable response was that one ballot and one man was lost in the maelstrom and meant almost nothing; therefore, the average business man apparently regarded his ballot as a futile thing. Most business men are very hopeless, very disheartened, and do not know what to do about this Government which is growing more complicated, more expensive and less responsive to their wants and needs. Most of the business men are simply going along and doing business and not "sticking their necks out," but waiting for some Moses to arise to lead us out of this jungled wilderness.

They Await the Messiah

Above everything else, they seem to want leadership, the sort of leadership they can understand, the fire of whose inspiration will kindle them and who can impress himself upon them for his utter and total honesty. In the coming election the majority of business people apparently will discard party labels and vote for people. They are now trying to find out, everywhere, whom they can send back to Congress with the hope that the Congressman or Senator will give a realistic, unpolitical twist to the manner he does his job. They agree that it will be far better to retain an incumbent who is trustworthy and competent, even if he belongs to the other party, than to elect someone who has no experience and who will be obliged to spend most of his incumbency, the next critical two years, in learning the intricate ropes of doing business in

—it looks like a **TOUGH WINTER!**

We hate to sound gloomy, but in light of recent developments it doesn't appear as though there will be enough furnace repairs to go around . . . at least for **THIS** heating season. So far this year we've been able to accommodate the majority of our customers on many difficult orders, but there's a limit to even *our* resources and it might be well to get your orders in **NOW** so we'll have plenty of time to scare up the parts.

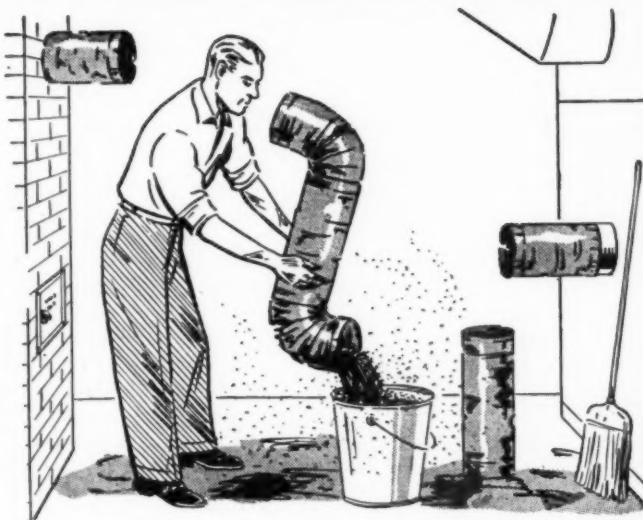
Anyway, tough winter or not, you can rest assured of one thing . . . we at Northwestern have always extended ourselves to fill orders and the current shortages won't stop us from at least *trying* our utmost to accommodate you.

For future reference remember that Northwestern has always championed quality and when times are normal once again you'll find our staff ready to provide it with the same old reliable Northwestern service.

Drop us a line anyway . . . at least we have plenty of literature.

NORTHWESTERN STOVE REPAIR CO.
662 West Roosevelt Road Chicago, Illinois

IS THIS NECESSARY?



VITROLINER BREECHING PIPE

ELIMINATES THE EXPENSE AND BOTHER OF FREQUENT REPLACEMENT

VITROLINER is a new breeching pipe for connecting heating plant to chimney. VITROLINER BREECHING PIPE will give many years of trouble-free service. A complete line of fittings makes any hookup possible and can be easily and quickly installed. VITROLINER eliminates the fire hazard of corroded pipe. VITROLINER is made of heavy gauge steel completely coated inside and outside with porcelain to prevent corrosion. VITROLINER'S porcelain finish is attractive and adds to the beauty of any room.

SPECIAL FEATURES: The Telescope section is adjustable in length and is used to fill in any odd length now accommodated by standard lengths. The Vitroliner damper section has a cleanout hole covered with a sliding sleeve.

VITROLINER CHIMNEY LINER

VITROLINER is an acid resisting chimney lining which can be installed in existing chimneys, easily and quickly. VITROLINER prevents chimney deterioration caused by acids in the flue gases. VITROLINER will catch the acid condensate and drain it away with no harm to the brickwork.

VITROLINER has been used for the past 16 years and is proven thru a long field record.

VITROLINER chimney lining is heavy gauge steel, double coated inside and outside with acid resisting porcelain fused into the steel at 1575° F.

VITROLINER will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT.

Write for further details and circular.

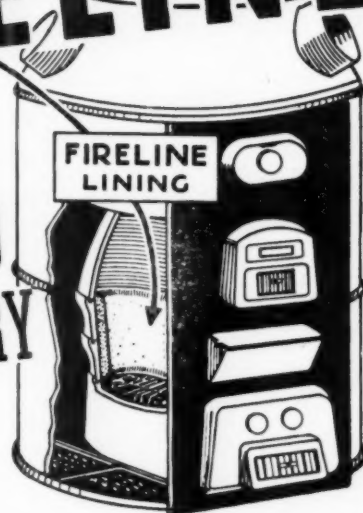
CONDENSATION ENGINEERING CORPORATION

122 So. Michigan Ave., Chicago 3, Ill.

from now on

FIRELINE

MEANS
MORE TO
YOU EVERY
DAY



Repairs cracked firepots without delay—without new castings

Cracked, burned out firepots can be made ready for winter in quick time with Fireline, the plastic, putty-like refractory that is installed through the furnace door, quickly and easily. It seals cracks and holes in the firepot castings, stops leakage of gas, odors, and dirt into the building. By increasing combustion efficiency it makes the old furnace a better heat producer than ever before! In fact, Fireline is extensively used to increase the heat delivery of new furnaces and to protect good firepots.

The alert furnace man who keeps a drum of this high-quality refractory on his truck has firepot problems licked. In a few hours, he can line any firepot with Fireline, then the fire can be rebuilt immediately. Even in the middle of winter he can repair leaky furnaces.

You merely pound Fireline into place with a hammer, trim it smooth, then rebuild the fire. When the fire has baked it out, Fireline forms a durable lining that will take temperatures up to 3000 deg. F. It is also used for setting stokers, for oil burner combustion chambers, and in steel furnaces for replacing and patching fire tile.

With Fireline you can handle more repair jobs. You save your customers money. You make a higher profit percentage. Write for bulletins, prices, and discounts.



TWO OTHER PRODUCTS YOU SHOULD KNOW



Fire-Hearth Castable—

The ideal refractory for setting stokers, forming precast combustion chambers and baffle tile. Easily installed: Just mix with water, pour into place, and trowel smooth. That's all there is to it.

Ironset Asbestos Furnace Cement
—The high-quality cement for setting up new furnaces and re-cementing old ones. Withstands higher temperatures. Will not crack, shrink, bloat, or blister. Makes your work more permanent. Try it on your next job and see how Ironset builds up your reputation for permanent, gas-tight work. You can't afford to use any cement but the best—and that means Ironset.

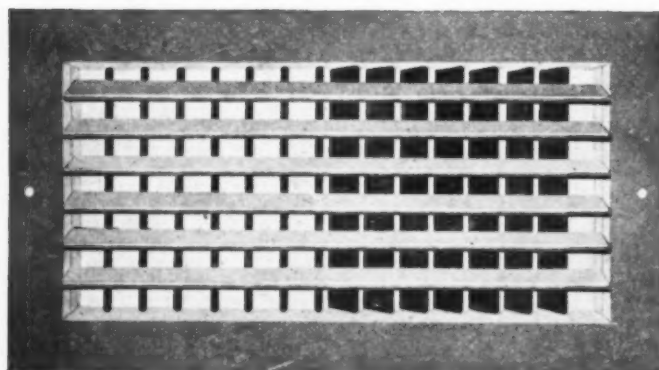
FIRELINE STOVE & FURNACE LINING CO.

1816 N. Kingsbury St. (Dept. I) Chicago 14, Ill.
Fireline Products are stocked by leading Jobbers.

FIRELINE

HEATING SPECIALTIES

GRILLES REGISTERS HIGH VELOCITY OUTLETS



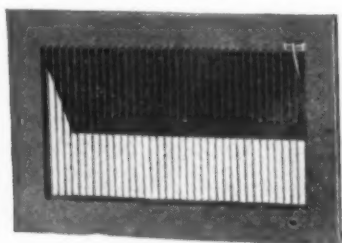
HIGH VELOCITY OUTLET

Adjusted for Down Throw and to One Side

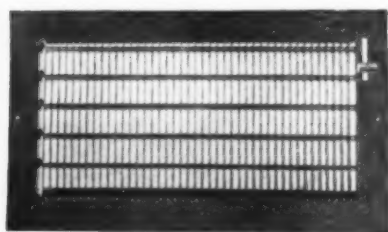
Style "DDH" illustrated above is one of eight variations of our Deep bar, high-velocity outlet—each bar individually adjustable with key furnished—with or without volume valves. Supplied with baked prime and sponge rubber gasket.

This is a heavy, attractive outlet made in all sizes, with matching fixed-bar down-deflecting return grille. Prices are competitive.

Prompt shipment of this line is available.



Style 71—Register—Wall or Baseboard. Single damper, attractive and low-priced. Complete with rubber gasket, screw holes, prime coat, and key for right-left adjustment of individual blades.



Style 74—Register—Wall or Baseboard. This Register utilizes 1" multiple-dampers to control volume and vertical direction. Multiple dampers may be set so as to obtain up, straight, or down deflection, as well as complete shut-off. The face is the same as all others of the "70" line—permitting air reflection right or left by adjusting front blades with key furnished. Blades are 1/4" center to center, and 1/4" in depth. Complete with rubber gasket, screw holes, prime coat. This is an attractive, well-constructed register, available promptly.

For immediate quotation and literature, wire, write or
Telephone your inquiry to Bloomfield 2-2345

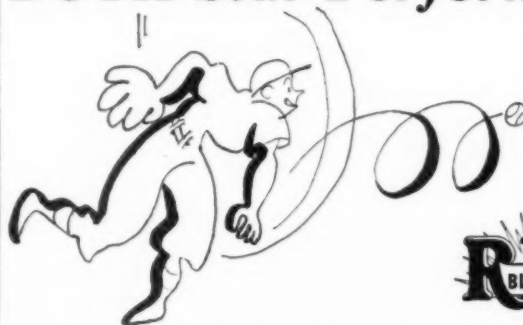
STEWART MANUFACTURING COMPANY
INCORPORATED
BLOOMFIELD, N. J.

Congress and in the Capital. But apparently the overwhelming tendency everywhere in this Southern, Southwest and Western country is to vote out the incumbent regardless, no matter how decent and competent he may be, and to elect new people, mainly to have a change. The organized minorities are thoroughly aware of the condition and are bending all their efforts to make capital of it.

Self Regulation New Aim

It is a discouraging paradox that while these business men we have been visiting are so anxious to destroy or put the bureaucracy under control, they are actively preparing to establish an expansion of the principle of bureaucracy. The textile industry, especially the Southern textile industry, is reported to have reached the stage where it needs outside help to untangle itself. To this end it wants to establish controls, such as price levels, priorities, and the rest of it, from the inside. The plan is to create autonomous industry bureaus or boards, with the power to impose these controls by action of the industry itself. To do so, it will be necessary to have the consent of the Federal Government. Apparently broadly following the pattern of the Webb-Pomerene Act, which allows business groups to combine for export operations, thus by-passing the Sherman Anti-trust law, it is reported Senator Maybank has prepared a bill, to be introduced in the next Congress, which will legalize the combination of industry groups to exercise supervision and administration of their own controls. Obviously this proceeding has some flavor of the NRA; also obviously it is an approach to socialization. Many persons from industry in OPA are very enthusiastic about the pro-

BOTH Star Performers



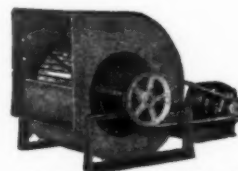
**REX
BLOWERS**

A great hurler excels on the diamond because he has such a wide variety of pitches—a repertoire that enables him to really bear down on any type of batter.

Rex Blowers excel in the field of heating and ventilating because they are available in such a broad range of sizes—a range that permits selection of a unit that most efficiently meets any air-moving requirement.

Not five, not ten—but TWENTY-TWO delivery rates, from 400 C.F.M. to 32,000 C.F.M. are offered by this really complete line! All units are designed by field trained engineers and sturdily constructed to insure user-satisfaction with their quiet operation and trouble-free service.

For heating and ventilating installations that consistently win and maintain harmonious customer-relations, profit-minded dealers choose Rex Blowers.



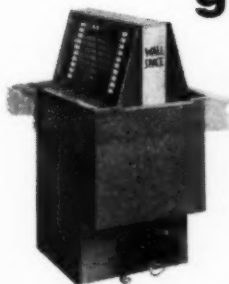
It will pay you to review the advantages of using Rex Blowers on future jobs. Send for Bulletin No. 222 for complete information.



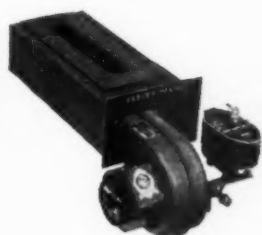
2310 Superior Avenue

Cleveland 14, Ohio

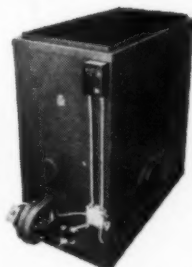
DEALERS—for FUTURE profits get lined up *Now* with KRESKY



FLOOR FURNACES



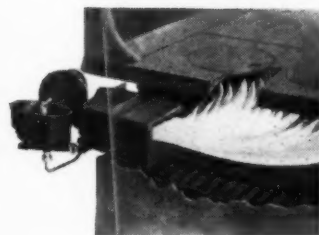
OIL BURNERS



FORCED AIR FURNACES



WATER HEATERS



RANGE BURNERS



Listed by Underwriters' Laboratories, Inc.
To Burn No. 3 Oil (Diesel) or lighter

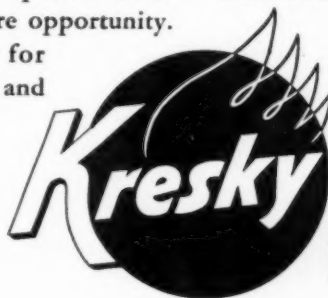
Wise dealers see in today's shortages the handwriting on the wall of tomorrow's profits. That's why so many are lining up now with Kresky, seeing in today's unprecedented demand a promise for future opportunity. ★ Always a money maker for dealers due to its versatility and

adaptability to a wide list of uses, the Kresky line includes Conversion Burners, Range Burners, Floor Furnaces, Water Heaters and Forced Air Units for small homes. ★ Delivery only to old customers now, but inquiries are invited from live dealers with an eye to the future.

KRESKY MANUFACTURING COMPANY

Pioneers in Oil Burning Equipment Since 1910

PETALUMA, CALIFORNIA



Oil
BURNERS

a SHEAR that WON'T TWIST



No. 436 - 16 Gauge
HEAVY DUTY SQUARING SHEAR

The new and improved foot power shear . . . no deflection or twist even when operating at capacity.

For built-in quality . . . accuracy . . . durability . . . ease of adjustments and smooth trouble free operation specify the 436. Other foot power shears in 42, 48 and 52 inch sizes.

An outstanding WYSONG and MILES Product. Write for Descriptive circular.

WYSONG and MILES Co
GREENSBORO, NORTH CAROLINA

Write Today
for Details on

HESS FURNACES

Now Available

→ Investigate the advantages of HESS Equipment — backed by 73 years of Heating and Ventilating Experience

HESS

Established 1873

WARMING AND VENTILATING CO.
1211 S. WESTERN AVE.
CHICAGO, ILLINOIS

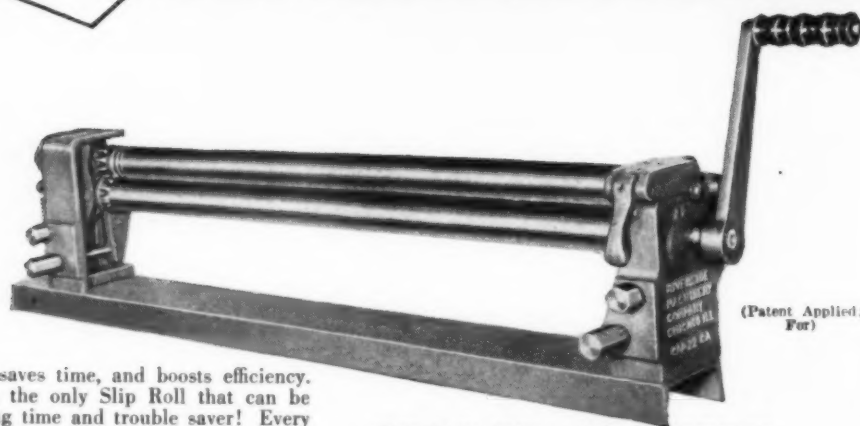
posed law. From the inside they see that Government supervision over controls rapidly degenerates into paralyzing red tape and lack of realism on the part of the men from the schools and from the bureaus of the Government. They hope the new plan will enable industry to do its own controlling. The trouble is, however, that Government must be part of the autonomous business control bureaus and that it is expected OPA, CPA, FTC and other agencies will be represented in the autonomous bureaus in order to see that no Federal laws are violated. If and when these industry control bureaus are set up, they will unquestionably become permanent agencies, and as permanent agencies, with Government personnel, they will inevitably mean an expansion of the bureaucratic organization. That logically means more Government employees and more money out of the tax funds in the Treasury to pay the new employees and to defray the costs of their operations. There is no doubt that if the new plan is put into operation it will be extended to all industrial groups, particularly since most business men appear to want some controls. There is sure to be some vigorous discussion of this program among business men as well as among Government people and in Congress. The people among whom this correspondent has traveled consider the debacle of the Veterans' housing scheme as one of the major disgraces of Government.

A contractor who operates in all parts of the country reported he had undertaken to construct 1,200 houses, strictly within the Wyatt limitations. With all the necessary means and workers and permits at his disposal he has been able to complete only *eight*! This man, one of the big builders of the nation, patriotic and capable, is so disgusted that he has quit and gone salmon fishing at the mouth of the Columbia River.

BUY THE

FRONT
ADJUSTING

NEW RIVERSIDE
SLIP ROLL MACHINE



(Patent Applied For)

Get the Slip Roll, that's easiest to operate, saves time, and boosts efficiency. The new RIVERSIDE open end slip roll is the only Slip Roll that can be adjusted from the FRONT . . . an astonishing time and trouble saver! Every part easily accessible. Made in 30" and 36" lengths. Rolls 2" diameter. One piece sturdy channel iron base for perfect alignment. New radial adjustment for real roll minimizes flattened area of rolled sheets, regardless of curvature.

PROMPT DELIVERY
Order Now!



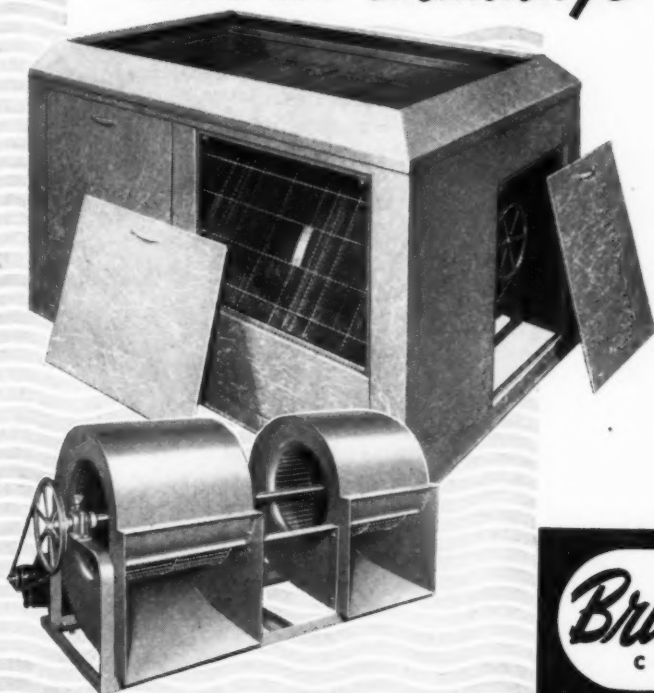
RIVERSIDE MACHINERY CO.

111 W. 111th ST.

PHONE PULLMAN 0048 CHICAGO 28, ILL.



There are *Brundage* BLOWER-FILTER UNITS for bigger buildings, too!

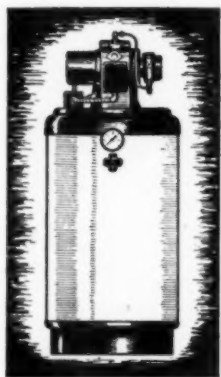


From a modern plant where custom building reflects the craftsmanship and engineering skill of more than a quarter century come these compact, easy to install twin blower filter package units, or assemblies. For those commercial, industrial, or even larger residential buildings where controlled circulation of air is essential these *Brundage* blower filter package units will do the job better.

Attractively designed cabinets have two access doors, house sturdily constructed assembly units and are available in styles and sizes to meet standard or special needs.



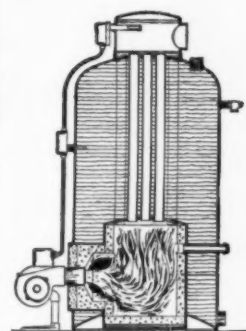
Blower Specialists
Since 1919
KALAMAZOO 11,
MICHIGAN



Two easy-to-sell, easy-to-install "packaged" Oil Burner Units built by **JOHNSON**

Dealers find these famous Johnson units especially profitable to sell because they fit the heat and hot water needs of so many buyers . . . and because they come completely assembled, ready to hook up to flue, wiring and water lines.

They are engineered and built to the extremely high standards of performance and efficiency which characterize the entire line-up of Johnson Oil Burners. You can recommend and sell them with complete confidence. May we send you a detailed description?



ECONOLUX 150-V BOILER-BURNER

Provides abundant low-cost heat and faucet hot water for a 10-room house. Exceptionally compact . . . measures only 24" x 60". Is small enough and attractive enough to be welcome in kitchen or laundry if no basement is available. Designed for use with either forced or gravity hot water heating systems. Powered by famous Johnson "Bankheat Burner" with 150,000 BTU output. Faucet hot water is heated in super-efficient double-shell outer jacket which has 10 gal. storage capacity and heats additional water almost instantaneously as it is drawn. Operation is completely automatic.

AQULUX WATER HEATERS

The hot water needs of anything from a 5-room house to a 500-room hotel can be filled perfectly with one of Johnson's time-tested Aqulux Water Heaters. There's a size and type for every need . . . for homes, restaurants, laundries, hospitals, factories. They deliver automatic hot water, year in and year out, at a cost per gallon that is difficult to match. If you have a water-heating job that must be handled right . . . check up on the performance and the profit possibilities of Aqulux Water Heaters.

.....*Johnson Oil Burners*.....
S. T. JOHNSON CO.
940 Arlington Ave., Oakland 8, Calif.
401 No. Broad St., Philadelphia 8, Pa.

Builders of fine Oil Burner Equipment since 1903

SELL THE **FRONT RANK** **BLOWER-FILTER UNIT**

AND YOU SELL THE

BEST!



IT HAS THE ADVANTAGES...

... easily attached to
SQUARE or ROUND FURNACE ...
Old or New ...

Meets present day demand for improved heating efficiency in winter and for "beating the heat" in summer. The important fact that this Unit is compact and easily adaptable to any type furnace new or old, and unusually low-priced for installing in smaller dwellings, makes it the Unit to recommend to customers—with volume and profits for yourself.

Note its superior design:

- Large door gives easy accessibility to motor and filters.
- Filters air from basement for summer cooling.
- Has automatic cut-out motor.
- Top motor mounting.
- Bearings and motor rubber-cushioned.
- Filter frames leak proof.
- Low speed—high pressure. Less noise and vibration.
- Comes in 5 sizes.
- Low priced.



This Unit is now better than ever—for bigger than ever profits for you.

ORDER From Your **JOBBER**

FRONT RANK FURNACE CO.
DIVISION OF LIBERTY FOUNDRY CO.
2500 OHIO AVE., ST. LOUIS 4, MO.

Fuller —

Save Fuel by Survey!

(Continued from Page 67)

Case No. 2

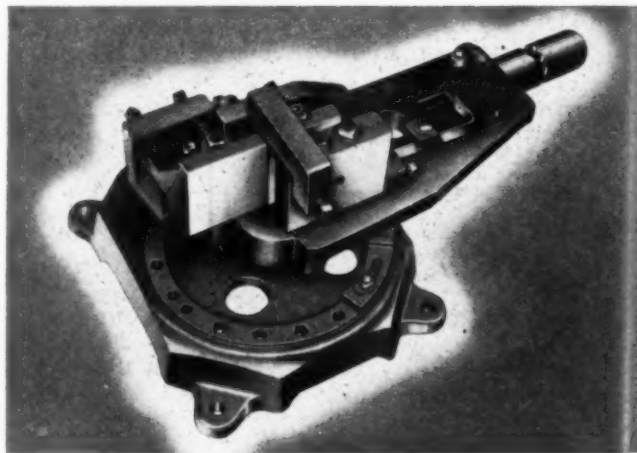
100,000 Btu. per hour Furnace Burner Unit
80,000 Btu. per hour Maximum Heat Delivery
80,000 Btu. per hour Maximum Heat Demand
1.0 Gals. per hour fuel jet (nozzle) at $\frac{2}{3}$ time operation.
7 inch diameter stack, flue.
84° F. Temperature difference to heat building to 70° F. in coldest weather.
7,189 degree days to heat
1,560 Gals. No. 3 Fuel Oil consumed per normal heating season.
85% overall efficiency.

Process No. 1

94,000 Btu. per hour Maximum Fuel Input
8.4 per cent CO₂ = 9 per cent Combustion Loss = 8,000 Btu.
1,016 cu. ft. Primary Combustion Air @ 65° F.
711 cu. ft. Excess Air.
1,727 cu. ft. total combustion air @ 65° F.
350° F. Flue Gas Temperature.
2,600 cu. ft. Dry Gas Loss @ 350 F. = 6,000 Btu.
Total Combustion and Dry Gas losses = 14,000 Btu.

Save Time and Money with

JK Benders



JK NO. 4 BAR BENDER

JK Benders are offered in a complete range of styles and sizes to meet the requirements for duplicating a large variety of shapes. They are easily set up for either hot or cold bending and there is practically no limit to the scope of work they can handle. If you have a bending problem you can solve it with a dependable JK Bender.

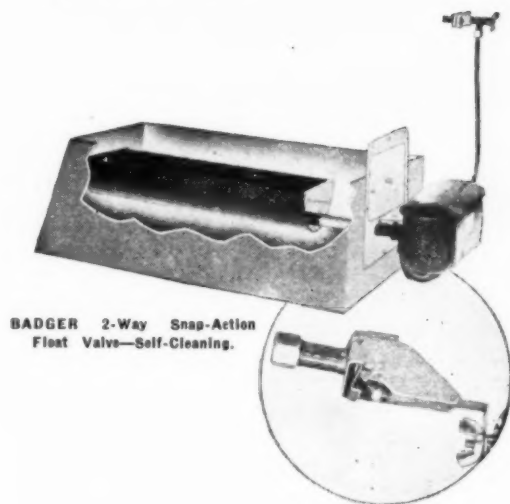
Send for Illustrated Folder and Price List

The JAMES KNIGHTS Company
SANDWICH, ILLINOIS

BADGER

Presents

A NEW AND COMPLETELY AUTOMATIC HUMIDIFIER



BADGER 2-Way Snap-Action Float Valve—Self-Cleaning.

WITH EXCLUSIVE BADGER-PATENTED "2-WAY-SNAP ACTION" SELF-CLEANING FLOAT VALVE . . .

SELL YOUR CUSTOMERS really *modern* humidifying equipment—feature this new BADGER Fully Automatic Humidifier, with its positive 2-way snap action float valve that flushes away all foreign matter. *No other humidifier valve* has this positive-action that snaps open with a full water flow, and just as instantly snaps shut to close off all water supply and stop seeping or dribbling.

PLUS-THESE OTHER BADGER "STAND-OUT" FEATURES:

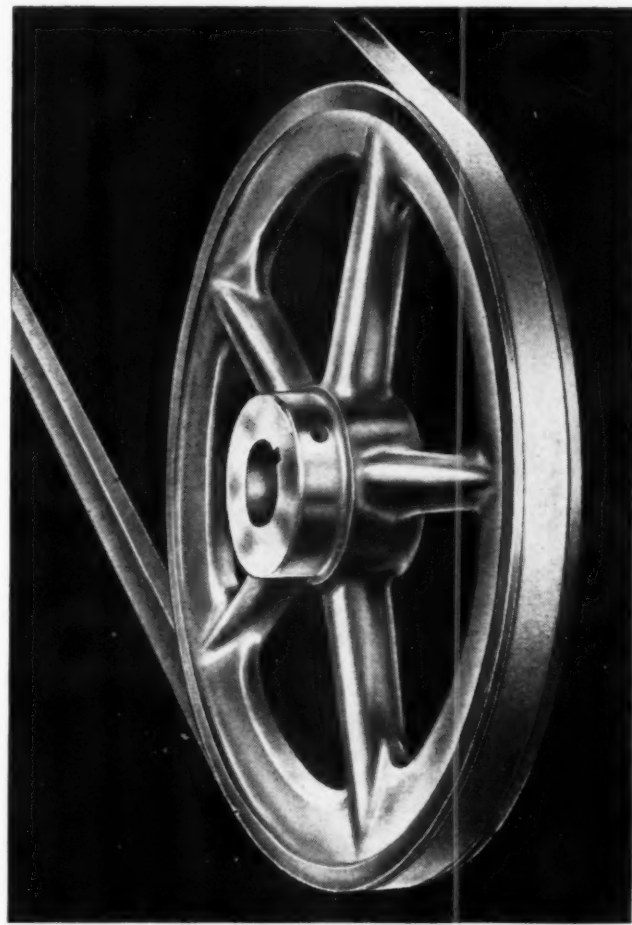
- ★ All parts highest quality, rust-proof materials.
- ★ "U"-Bottom Evaporating Pan—offers less resistance to air flow.
- ★ EVAPORATING BRICKS—available for gravity and forced air. Greatly increases evaporating surface—regulating amount of evaporation to suit individual needs.

A Correct Size of BADGER Humidifier for Every Furnace.

Write direct for complete information and bulletins.

Badger CORPORATION

Milwaukee 2, Wisconsin



MAUREY V-PULLEYS

provide a L-O-N-G step toward TROUBLE FREE Performance

Our long experience in designing and manufacturing V-Pulleys, our complete understanding of their uses, and the finest materials—all are combined in making Maurey V-Pulleys the very best Pulley installations for Refrigeration and Air Conditioning systems as well as for Fans and Blowers.

For unfailing, continuous operation be sure to specify Maurey V-Pulleys.

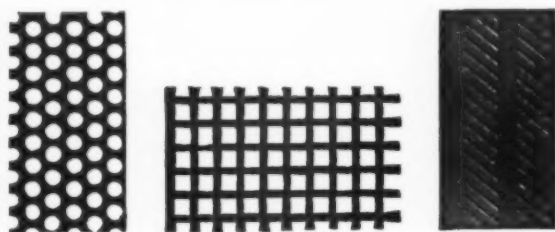
MAUREY MANUFACTURING CORP.

2915 South Wabash Avenue
CHICAGO 16, ILLINOIS



PERFORATED METALS ARE USED

in many important and essential industries such as the processing of grain, food products, chemicals, metals, coal, petroleum, etc. We make all sizes and shapes of holes to meet the most exacting conditions.



The Harrington & King PERFORATING CO.

5649 Fillmore St., Chicago 44, Ill. — 114 Liberty St., New York 6, N. Y.

Useful heat delivered to building = 80,000 Btu.
Total Btu. Input per hour = 94,000 Btu.

Comparative Costs in Fuel

Conversion Oil Burner, Warm Air	
Gravity Furnace ... 2320 G. @ $7\frac{1}{2}$	= \$174.00
Furnace Burner Unit (Forced Air)	1560 G. @ $7\frac{1}{2}$ = \$117.00
Fuel Savings (Gallons & Cost per heating season)	760 G. @ $7\frac{1}{2}$ = \$ 57.00

Methods of Computation

It will be noted that two different methods have been used in computing the combustion and dry gas losses shown in Cases No. 1 and No. 2. Case No. 1 involves three types of dry gas losses: Primary, or theoretical air, Excess air and a considerable amount of Secondary air. Because of this rather complex condition and in view of the fact that it is difficult, if not impossible to measure the input of secondary air, it is much simpler, in this particular case, to determine the dry gas losses on the basis of temperature, velocity and Btu. heat content per cubic foot of exhaust or dry gas stack losses.

Case No. 2 offers another type of situation. This is a result of the fact that most furnace burner units are tightly sealed, thereby do not usually have any secondary air ports, cracks or leaks that will admit air that is not essential to the process of combustion. Thus, in such cases, it is easy to figure primary or theoretical combustion air, plus excess air and to calculate the dry gas loss on the basis of the actual heat content per cu. ft. of the exhaust dry gases.

Yes!

We Are Making As Much

**H A N D Y
P I P E**

as availability of materials makes possible

F. Meyer & Bro. Co.

Peoria, Illinois

**WANT AN
EXTRA
PROFIT ON
7 YEARS'
SALES?**

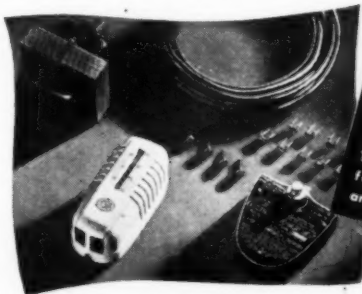


SELL THERMOSTATIC HEAT REGULATOR SETS....To Owners of OIL HEATERS Sold Since 1939

You have a long list of ready prospects for this A-P Heat Regulator Set—all the owners of Oil Burning Space Heaters using any A-P Constant Level Oil Control sold and delivered since 1939.

Tell all these old friends how THERMOSTATIC TEMPERATURE REGULATION can be added to their heaters easily and at low cost — with the A-P Model 240-ED Heat Regulator Set. They'll appreciate the convenience and luxury of steady room comfort at the touch of a thermostat dial, and the fuel-saving advantage that will practically pay for the set.

Get ready for this EXTRA sale and profit now! Write for descriptive literature, prices, and samples of advertising and selling material.



**A-P Model 240-ED
Electric Heat Regula-
tor Conversion Set.**
Includes: Electric Con-
version Top, Wall
Thermostat, Trans-
former, Accessories
and Instructions.

Easily Installed — Just mount
Electric Conversion Top on
present Manual Control and
connect to Thermostat and
Transformer.



(Be sure your new Heater Lines are
equipped with A-P DEPENDABLE OIL Controls — for faster
sales, greater customer satisfaction.)

AUTOMATIC PRODUCTS COMPANY

2452 NORTH THIRTY-SECOND STREET, MILWAUKEE 10, WISCONSIN

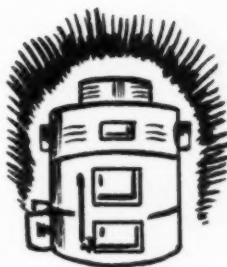


DEPENDABLE
Oil Controls

DESIGNED TO ELIMINATE SERVICING

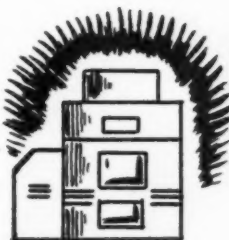
THARCO

*the FURNACE CEMENT that
has met all the tests of
SERVICE.*



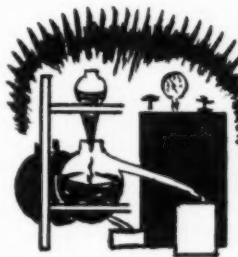
IN NEW FURNACES

Leading furnace manufacturers use Tharco Asbestos Furnace Cement because they recognize that here is leader's quality based upon long experience with all furnace operating requirements.



IN REPAIR JOBS

Furnace dealers who do quality repair work will not compromise on the important matter of furnace cement. That's why Tharco is the choice of furnace dealers who know their business!

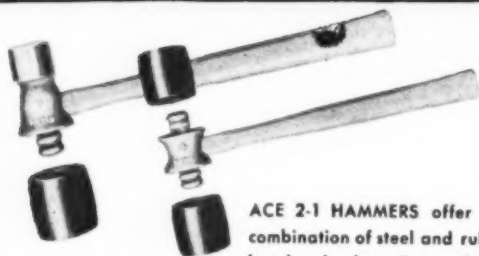


IN LABORATORY TESTS, TOO!

Tharco meets every test of service because in Armstrong Laboratories there is ceaseless testing and research that keeps continually apace of furnace installation, operation and repair problems. Use Tharco Furnace Cement always.



TWO HEADS ARE BETTER THAN ONE!



ACE 2-1 HAMMERS offer a combination of steel and rubber heads that give a dual use. Rubber head with correct degree of toughness is replaceable when worn. Hickory

handle and drop forged heat treated shank assure sturdiness. Perfect balance. Weight 2½ lbs. There is also the ACE 2-1 combination rubber and fiber headed hammer with aluminum shank for light metal and electrical work. Both heads replaceable. Weighs only 1½ lbs. Write for literature. Thousands in use.

**Distributors and
Jobbers Wanted**

● ACE 2-1 HAMMERS REALLY MAKE A HIT



Dan Morey

814-16 SO. ROBERTSON BLVD., LOS ANGELES 35, CALIF.

PLANNED SERVICE



The Grand Rapids Furnace Cleaner increases your profits by enabling you to merchandise through your service department. While you make money on the cleaning you make an additional amount by selling new equipment and repair jobs. This planned service pays in a third way, too, for it saves vital fuel by keeping your customers' furnaces operating efficiently.



The sturdy Grand Rapids Furnace Cleaner is soundly engineered to give years of satisfying service. It cleans thoroughly, sucking out all dirt and dust, eliminating "plug up" conditions. Quickly cleans furnaces, boilers, chimneys, stokers, oil burners, heaters — or the entire basement. Write for complete details.

**GRAND RAPIDS
FURNACE CLEANER**

MODEL OF *The Doyle VAC-IT*

DOYLE VACUUM CLEANER CO., 227 Stevens St., S. W., Grand Rapids 7, Mich.

Carbon Dioxide Setting

Many furnace burner and boiler burner units are operated at a 10.5 per cent carbon dioxide setting, which is perfectly safe as it represents a combustion loss of only 5 per cent. Very little is to be gained by a finer setting, since the risk of "Puff Backs" is incurred by an adjustment much finer than 10.5 CO₂. Conversion burners are generally adjusted to an 8.4 CO₂ setting; this seems to be most efficient, on the average.

Summary

Let us briefly sum up the cardinal points of the procedure to follow in making a Fuel Efficiency Survey. The most important thing to do is to obtain the heating plant specifications for the building which is to be surveyed. This gives the basis for all subsequent calculations. Next step is to get an overall picture of the nature of the heating season in the particular locality, through use of Weather Bureau statistics.

Then the actual calculations can be made of the heat input of the furnace or boiler unit, the heat delivery to the building and the heat demand of the building. Taking into consideration the heat input in relation to the combustion and dry gas losses, the overall efficiency of the heating plant is figured. Once the efficiency has been determined, it is then the duty of the inspector to ascertain what adjustments can be made in the heating plant, or what changes can be made in the building specifications, such as insulation, storm sash, etc., to increase the overall efficiency to the highest possible point.



Barth
U. S. A.

COMBINATION MACHINES

BARTH offers a wide range of Combination Machines for burring, edging, wiring, turning, and flanging. Three sizes are furnished with roll diameters 1½", 2¼", and 3¼". Capacity to 18 gauge.

All newly designed and sturdily built to meet your requirements.

THE BARTH MANUFACTURING CO.
MILDALE, CONN.

Eliminate Cross-Seaming
Reduce Cost of Soldering
Save Installation Time
WITH Follansbee
SEAMLESS TERNE ROLL ROOFING

CERTAINLY you can increase roofing profits with Follansbee Seamless Terne Roll Roofing. The 50-foot rolls have uniformly straight edges, require no trimming, and can be cut to required length right on the job.

Certainly you want to take advantage of all these features in every roofing job. If the Distributor can't fill your orders today,—won't you ask again for Follansbee Seamless Terne Roll Roofing?

CARRIED IN STOCK
by Leading Distributors

FOLLANSBEE STEEL CORPORATION
GENERAL OFFICES • PITTSBURGH 30, PA.



Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. *Sales Agents*—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. *Plants*—Follansbee, W. Va. and Toronto, O. *Follansbee Metal Warehouses*—Pittsburgh, Pa., Rochester, N.Y. & Fairfield, Conn.

COLD ROLLED STRIP • POLISHED BLUE SHEETS • CLAD METALS
ELECTRICAL SHEETS AND STRIP • SEAMLESS TERNE ROLL ROOFING



Ernest W. Smart

NORMAN EASTERN STATES DISTRIBUTOR

Announces the Appointment of

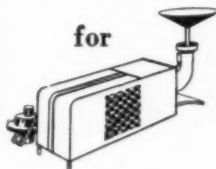
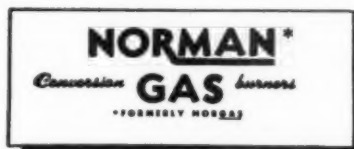
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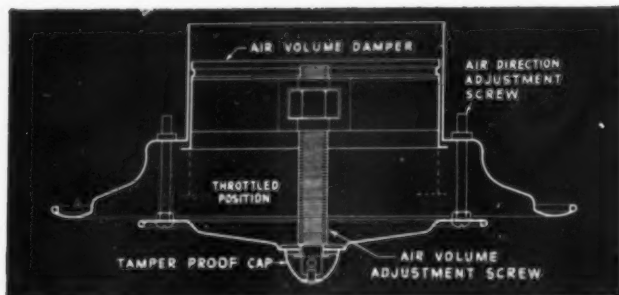
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Neubecker-Diffuser Elbow

(Continued from Page 63)

the side elevation. For example: to find the true length of the dotted line 2-12 in front elevation, set off the distance on any point on the perpendicular line dropped from 2 in the side elevation as shown from 2° to 12. From this point 12 draw the horizontal line 12-12° to intersect the perpendicular line dropped from 12 in the side elevation at 12°. A line drawn from 2° to 12° shown dotted, will be the true length of the dotted line 2-12 in front or side elevation.

Take another example: Find the true length of the solid line 3 to 10 in front elevation. Set off this distance on any point on the perpendicular line dropped from point 3 in side elevation as shown from 3° to 10. From 10 draw the horizontal line 10-10° to intersect the perpendicular line dropped from 10 in side elevation at 10°. A line drawn from 3° to 10° shown solid, will be the true length of the solid line 3-10 in front or side elevation.

In this manner all of the true lengths are obtained. By referring to the diagram of true lengths it will be noticed that the true lengths of the solid lines are shown by *heavy* solid lines and the true lengths of the dotted lines by *heavy* dotted lines.

Developing the Cheek Pattern

The pattern for the cheek is now in order. Take the length of 1-12 in side elevation and place it as shown by 1°-12° in the cheek pattern. Now with 1°-2° in the *heel* pattern as radius and 1° in the cheek pattern as center, describe a short arc near 2°, which intersects by an arc struck from 12° as center with radius

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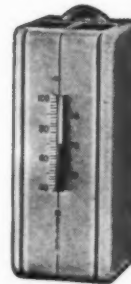


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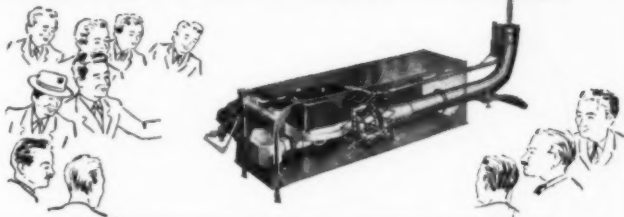


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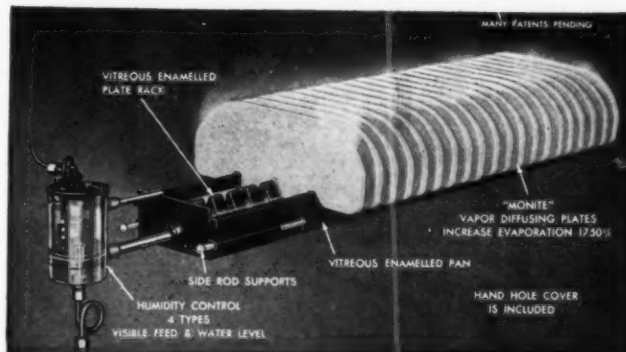
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equal to $12^{\circ}-2^{\circ}$ in the diagram of true lengths. Now with $12^{\circ}-11^{\circ}$ in the *throat* pattern as radius and 12° in the cheek pattern as center describe a short arc near 11° which intersect by an arc struck from 2° as center with a radius equal to $11^{\circ}-2^{\circ}$ in the diagram of true lengths.

Proceed in this manner using alternately first the proper numbered division taken from the *slant* line in the *heel* pattern, then the proper numbered true length of dotted line; the proper numbered division taken from the *slant* line in the *throat* pattern, then the proper true length of solid line, until the last line $6^{\circ}-7^{\circ}$ in the cheek pattern is obtained which is equal to $6-7$ in side elevation. Through the intersections so obtained in the cheek pattern trace the curved line 1° to 6° and 7° to 12° to complete the net pattern shape.

Allowance for Pittsburgh Locks

Add the customary double edges to the heel and throat patterns and single edges to the cheek pattern for Pittsburgh or hammered lock.

Kugler— Jigs and Fixtures

(Continued from Page 75)

to braze galvanized iron without destroying the galvanizing. This flux, which is a thick paste, is painted on the edges, top and bottom of the joint. It protects the zinc coating from oxidation by the air. It is also used for the same protection when cutting galvanized steel. The oxyacetylene braze welding of galvanized iron is pictured in Fig. 6.

The low temperature silver brazing method is par-

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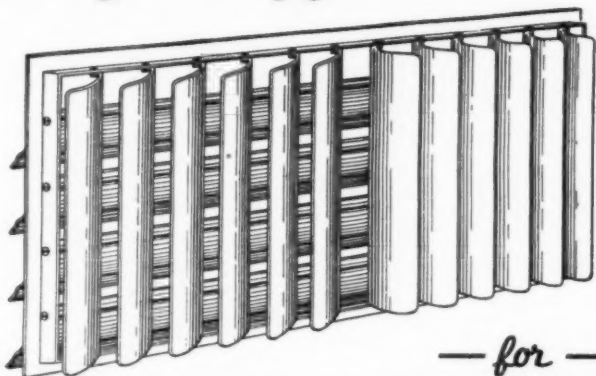
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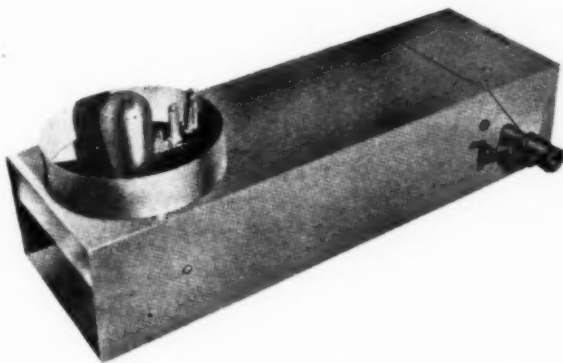
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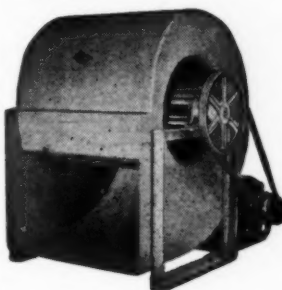
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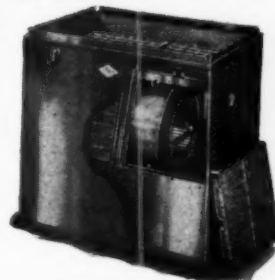
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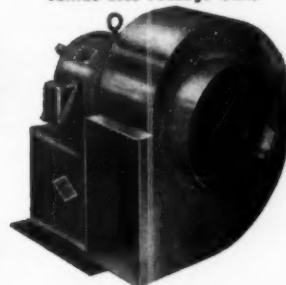


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ticularly helpful when distortion must be held to a minimum. For this method of joining, the lap type joint is more common than the butt joint. Into the lap area of the silver brazed joint is flowed an alloy consisting of 50 per cent silver, 18 per cent cadmium, 15.5 per cent copper and 16.5 per cent zinc. This silver brazing material has the extremely low melting point of 1175 deg. F. For best results, the clearance between parts is maintained at 0.003-0.006 inch; hence, the amount of alloy used is small and the cost per joint low. The low flowing temperature minimizes distortion. An excellent example of this control of distortion by silver brazing is shown in Fig. 7. Here the sheet brass blades of a blower are brazed to a heavy ($\frac{3}{8}$ inch) brass end plate using Easy-Flo, the silver, copper, cadmium, zinc alloy. This same alloy may be used for other ferrous and non-ferrous metals as well

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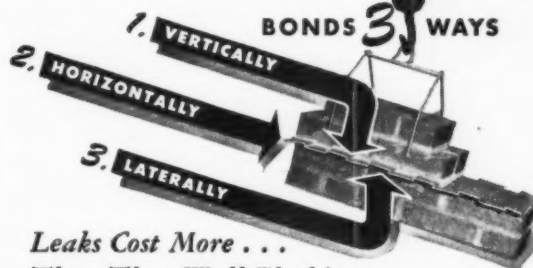
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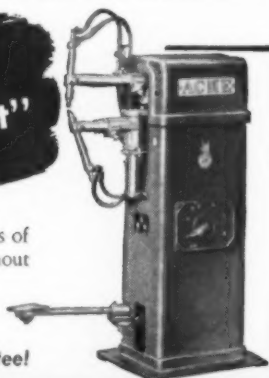
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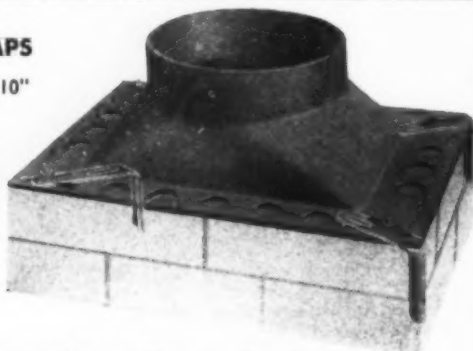
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It was stated earlier in this article that the principal reason for using jigs in sheet metal welding is to control distortion or warpage. An examination of the factors influencing this phenomenon will be helpful. If a thin section of metal of the order of 1/16 inch thickness is heated locally from one side, the apparent expansion effect is magnified over that experienced on heavier metals, because the thickness acting as a lever arm is very short and any difference in temperature between the outer and inner layers produces warping movements in inverse ratio to the thickness. Added to this condition is the fact that thin metals usually have considerable strains from the rolling operations. When the heat of welding is applied, some of these strains are relieved and add to warping movements described above.

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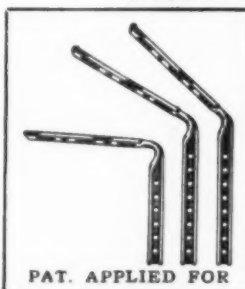
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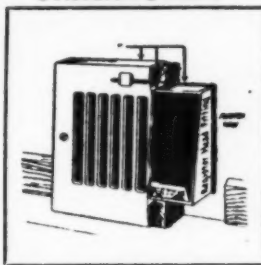
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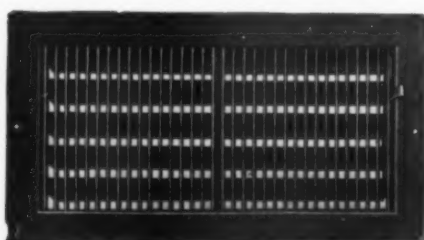
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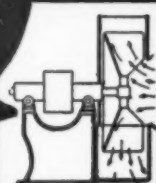
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(Continued from Page 82)

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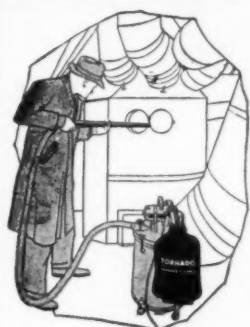
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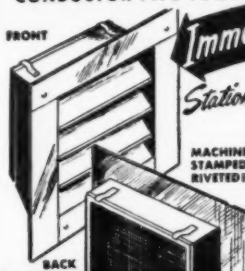
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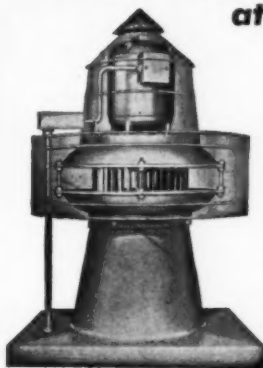
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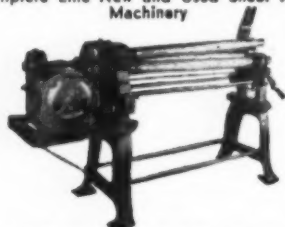
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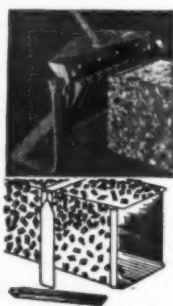
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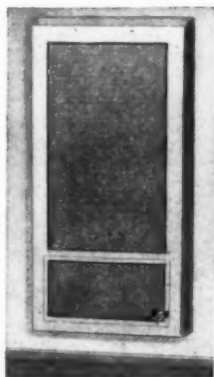
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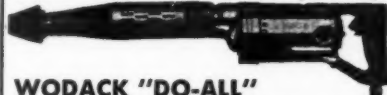
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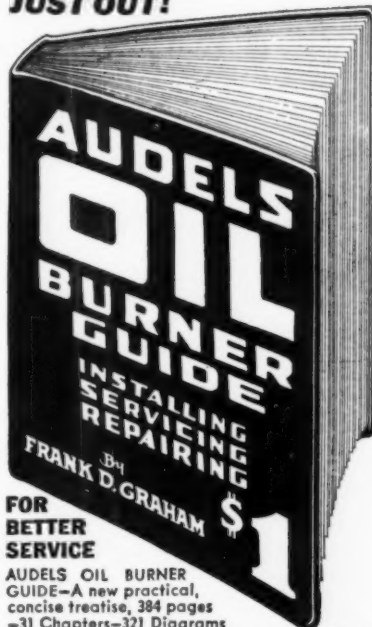
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